

Chapter 03

Consideration of Reasonable Alternatives

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3 Consideration of Reasonable Alternatives

3.1 Environmental Impact Assessment Requirements

Article 5(1)(d) of Directive 2011/92/EU, as amended by Directive 2014/52/EU “the EIA Directive”) requires that an Environmental Impact Assessment Report (EIAR) contains ‘a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and the main reasons for the option chosen, taking into account the effects of the project on the environment’.

In addition, Annex IV to the EIA Directive provides that the EIAR shall include:

“A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”

In addition, given the proposed road development for which approval is sought in this instance, section 50(2)(b)(iv) of the Roads Act 1993, as amended (“the Roads Act”) states that that the EIAR shall contain the following information:

‘...a description of the reasonable alternatives studied by the road authority or the Authority, as the case may be, which are relevant to the proposed road development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed road development on the environment’

Section 50(2)(b)(vi) of the Roads Act also requires that “any additional information specified in Annex IV [quoted above] that is relevant to the specific characteristics of the particular proposed road development or type of proposed road development and to the environmental features likely to be affected” also be included in the EIAR.

Accordingly, this Chapter of the EIAR describes the reasonable alternatives studied and the main reasons for the selection of the proposed BusConnects Galway: Cross-City Link (University Road to Dublin Road) Scheme (hereafter referred to as the “Proposed Scheme”) considering the effects on the environment.

It considers the alternatives at three levels:

- Strategic Alternatives;
- Route Alternatives; and
- Design Alternatives.

The reasonable alternatives studied which are relevant to the Proposed Scheme and its specific characteristics are described in the subsequent sections of this chapter.

3.2 Strategic Alternatives

3.2.1 Galway Transport Strategy

The Galway Transport Strategy (GTS) was introduced in Section 2.2.5.1 of Chapter 2 (Need for the Scheme) of this EIAR3.6, including the seven principles adopted to guide the measures needed to be implemented to support integrated transport solutions (both infrastructure and transport services) to allow Galway City and environs to continue to grow in a sustainable manner. In planning for the future, the GTS also took cognisance of existing development patterns within the city and environs.

While Galway has a compact walkable core, outside of the city centre, the suburbs have developed as a succession of low density residential and employment areas, which has led to a predominance of private car usage as a means of travel. As a result, the transport difficulties experienced across the city, particularly at peak travel times, have a significant effect on the quality of life of residents and are also impacting on the economic functionality of the city.

The major proposals to be implemented under the GTS were also set out in Section 2.2.5.1 of Chapter 2 (Need for the Scheme) of this EIAR, including the Proposed Scheme. These were formulated as part of the transport strategy development process and through the assessment of travel demands generated by existing and future land use planning requirements.

The approach undertaken in developing the GTS is presented in Diagram 3.1 and summarised as being:

- to initially establish strategic objectives;
- to develop and test strategy options; and
- to develop specific proposals which are brought together under the overall strategy.



Diagram 3.1: GTS Strategy Development Process

More detail on the consideration of alternatives by mode as part of the GTS is presented in subsequent sections of this chapter. As illustrated in Diagram 3.1, each was evaluated against set appraisal criteria in line with the (then) Department of Transport Guidelines on a Common Appraisal Framework (CAF) for Transport Projects and Programmes. These include the ‘Environment’, to *‘encourage better integration between transport and urban form, thereby minimizing harmful transport emissions’*.

In formulating the overall GTS, and the infrastructure and services needed to support it, the most suitable means of travel (travel modes) to address the travel demand for each type of journey were assessed, and as illustrated in Diagram 3.2.



Diagram 3.2: Trips to, within and across Galway

This diagram illustrates the wide variety of trip types currently within and through the study area and suggests the appropriate modes to serve these travel demands. These can be classified into the following broad categories:

- **A-A – within the City Centre** – for example, Eyre Square to Dominick Street. These types of journeys should generally be made on foot or by bicycle. Journeys across the centre by car should be discouraged and drivers should be encouraged to either use public transport or park their car before travelling across the central area;
- **B-B – Outer City <> City Centre** – for example, Knocknacarra to Eyre Square. Journeys on radial corridors should be possible by bus (or other forms of public transport) – provided that the service provision is of a high frequency. Safe cycle routes are also essential to encourage cyclists;
- **C-C – Outer City <> External Areas** (not crossing River Corrib) – for example, Ballybrit to Tuam. These journeys are difficult to cater for by public

transport and are often not practical on foot or by bicycle. Use of Park & Ride bus services could however be attractive if the service is of a high quality and frequency;

- **D-D – City Centre << >> External Areas** – for example, Eyre Square to Loughrea. These journeys are difficult to attract in large numbers to public transport, as travellers have a wide range of origins outside the city which cannot all be served by frequent public transport. Provision of Park & Ride bus services could however be attractive if the service is of a high quality and frequency;
- **E-E – Outer City << >> Outer City** (crossing River Corrib and via the City Centre) – for example, Salthill to GMIT. At present, these journeys are generally made by car. However, safe and direct dedicated cycle routes would encourage cycling for this type and length of journey, and if a reliable public transport service was provided and operated via the city centre, some drivers would consider these options to be a reasonable alternative. Frequent and reliable bus services on a few radial corridors would allow passengers to transfer between services with a short wait.
- **F-F – External << >> Outer City** (crossing River Corrib but not via the City Centre) – for example, Maigh Cuilinn to Parkmore. These journeys are difficult to attract to public transport, as travellers have a wide range of origins outside the city which cannot all be served by frequent public transport. An alternative to travel by car could be Park & Ride bus services if the service is of a high quality and frequency.
- **G-G – Outer City << >> Outer City** (crossing River Corrib but not via the City Centre) – for example, Westside to Mervue. Journeys between peripheral areas can be difficult to serve by public transport, as orbital public transport is generally not financially viable, and public transport via the city centre can often be much slower than travel by car if not on connecting public transport routes. Some travellers will however use public transport via the centre if it is of sufficient frequency and reliability. In addition, the provision of safe dedicated cycle routes could facilitate cycling for this type of journey;
- **H-H – External Area << >> External Area** (crossing River Corrib but not via the City Centre) – for example, An Spidéal to Headford. These journeys are the most difficult to attract to public transport, as travellers have a wide range of origins and destinations outside the city which cannot all be served by frequent public transport. Travel by car is often the only practical mode; and
- **I-I – Short travel in Outer City Areas** – for example, Renmore to Merlin Park. These types of journeys can often be made on foot or by bicycle and are generally difficult to make by public transport unless the journey is on a main radial bus corridor.

The assessment of travel demand and journey types concluded that, given the low-density nature of land-use development in Galway City and environs, the continued need for improvement in bus services as part of the overall GTS would be required.

This requirement was also assessed in combination with what needed to be done to:

- The traffic networks (traffic management, the road and street network, parking, and HGV management);
- Integrate with other local public transport measures;
- Integrate with regional public transport needs;
- Support walking and cycling; and
- Combine with other supporting transport measures (i.e. smarter mobility solutions, land-use integration, behavioural change, and demand management measures).

The GTS also looked at a phasing approach to the implementation of supporting and infrastructure and services in the short, medium, and longer-term over a 20-year period.

3.2.2 ‘Do Nothing’ Alternative

The impact of traffic congestion, limited public transport services and their reliability because of this congestion, has been a significant constraint to the growth and development of Galway for some considerable time. These significant problems and inefficiencies with respect to the movement of people and goods were set out in the GTS as being:

- An over-reliance on private cars;
- Peak hour congestion and journey time unreliability for all motorised transport;
- Safety concerns as a result of traffic congestion;
- Many key junctions within the city operating at, or over capacity;
- Connectivity issues on the National and Regional road network resulting in significant volumes of cross-county and strategic travel demand between east and west Galway being concentrated and funnelled through the city area in order to cross the River Corrib;
- The pattern of residential development in the area, along with the location of employment destinations, generating a large amount of cross-city as well as city-bound travel demand;
- Large amounts of residential development located proximate to major employment and educational destinations city-wide, but not readily accessible by walking, cycling or public transport, thereby encouraging travel by private car;
- The short distance between Lough Corrib and Galway Bay, two significant natural physical constraints impacting upon the city;

- A natural barrier to cross-city and cross-county travel formed by Lough Corrib, the River Corrib and Galway Bay, with the three principal river crossings experiencing heavy traffic flows, leading to congestion and delay;
- The position of Galway City as a major regional centre for employment and education for a large geographical area, leading to large numbers of long-distance commuters for whom public transport is not currently a viable option, which leads to greater numbers of cars entering the city;
- The impact of traffic congestion on the City's reputation, particularly with regard to inward development;
- The suburban nature of much of the residential areas, and the wide distribution of jobs across a number of central and non-central locations, which lead to a situation where travel by public transport is not a viable option at this point for many journeys;
- Long journey times and delays on the current bus network, due in part to the limited available road space in the city centre for introducing bus priority which both reduces its attractiveness to passengers and increases costs of operating; and
- Limited road space on most of the principal roads, which reduces opportunities for safe and comfortable cycling.

Prior to the onset of the COVID-19 pandemic (the 'pandemic'), and as set out above, congestion throughout Galway City and environs was particularly high and increasing year on year. While traffic levels reduced considerably at times over the last two years as and when public health restrictions were either imposed or relaxed by Government, we have seen a more recent rebound effect in terms of traffic volumes increasing with resulting congestion again. Diagram 3.3 below presents count data gathered from a Transport Infrastructure Ireland traffic counter located on the N6 Bothar na dTreabh between the N83 and N84 junctions. This demonstrates a significant reduction on traffic on this route from March 2020. Traffic volumes fell to as low as 35% of the March 2019 levels, however as the graph demonstrates, this has continued to increase since October 2021. Traffic volumes at this location in March 2022 are trending towards those levels experienced prior to the pandemic.

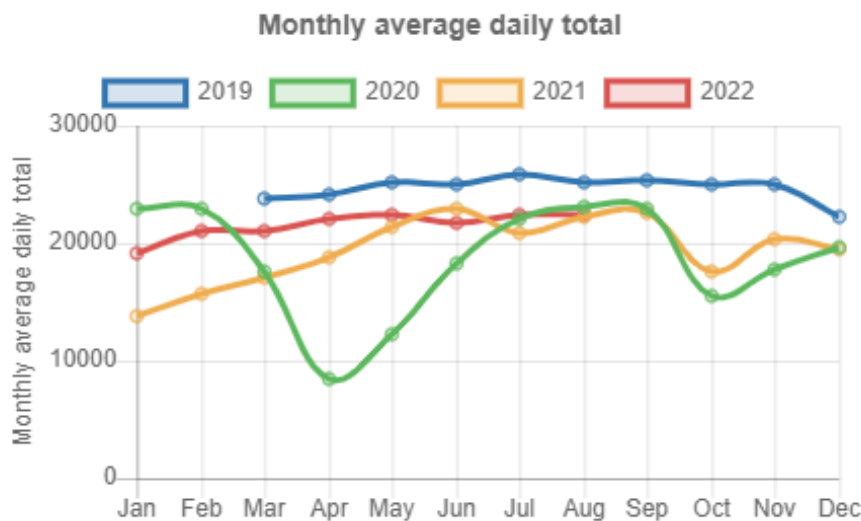


Diagram 3.3: Transport Infrastructure Ireland Traffic Counter Data – N6, Galway City

Without appropriate planning for a return to a more normal levels of travel demand, and an improved quality of life beyond the pandemic, potential impacts could worsen for the city and environs including:

- Continued growth in traffic congestion;
- Continued impacts on the ability of the region to grow economically due to said increased congestion;
- Longer journey times and increased travel stress diminishing quality of life; and
- Environmental emissions targets will not be met.

Specifically, in relation to existing bus services in the region, in terms of the out-workings of a strategic “Do Nothing” alternative, currently, the bus network is characterised by discontinuity, whereby buses on routes have very limited dedicated bus lanes and / or supporting priority measures.

This means that for most of the journey, buses and cyclists are competing for space with general traffic and are negatively affected by congestion. This results in delayed buses, unreliable journey times for passengers and safety risk for cyclist.

This is illustrated best by the journey time information for an existing bus service which for the most part traverses the route of the Proposed Scheme. This data was obtained from the NTA utilising their Automatic Vehicle Location (AVL) system. A sample was taken for the 404 bus route in the month of November in 2019 between two stops which correspond to the start and end points of the proposed scheme (i.e., to the west on R863 University Road, near the junction with R864 Newcastle Road and to the east on the R338 Dublin Road via the Lakeview School).

The data was analysed for the average weekday in November 2019 for both eastbound and westbound services and a profile across the 7:00-19:00 period was generated. Diagram 3.4 and Diagram 3.5 present the journey time data for both the westbound and eastbound directions respectively.

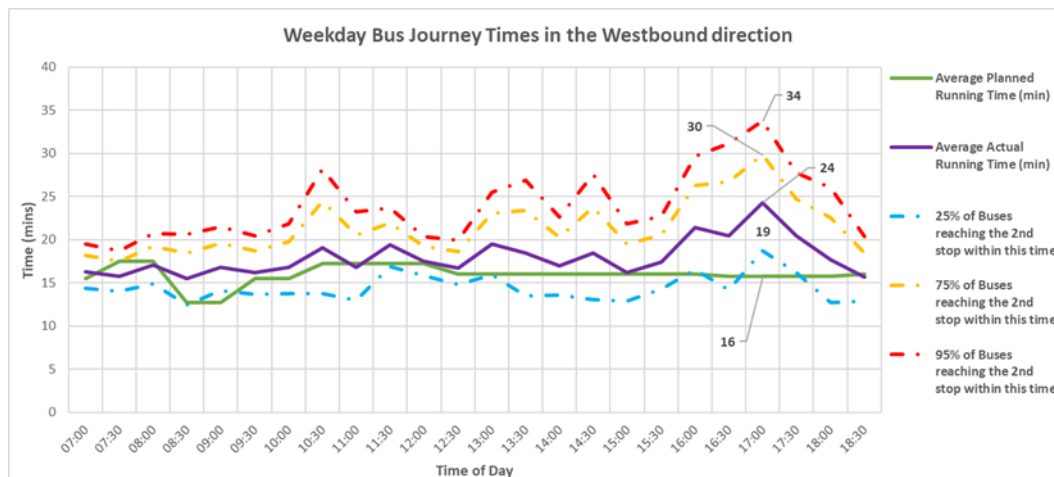


Diagram 3.4: Average Weekday Bus Journey Time Profile on Cross-City Link Route (Westbound Services)

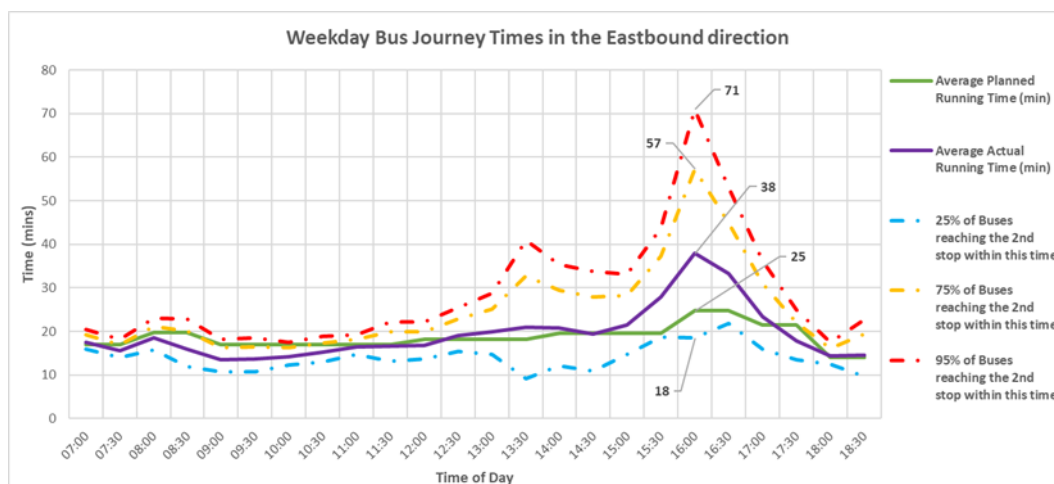


Diagram 3.5: Average Weekday Bus Journey Time Profile on Cross-City Link Route (Eastbound Services)

For the westbound services, the AVL data shows a high degree of variability in journey times across the entire day with the worst periods occurring around 10:30 and from midday onwards, with the peak occurring in the evening around 17:00. At this time, we see the average planned running time is expected to be 16 minutes between the two stops (on the R338 Dublin Road and on R863 University Road) but the average is actually 24 minutes (a 54% increase), with 75% of buses reaching the 2nd stop within 30 minutes (89% increase) and 95% of buses reaching the 2nd stop within 34 minutes (114% increase).

For the eastbound services, the AVL data shows a high degree of variability in journey times from midday onwards with the peak occurring in the evening around 16:00.

At this time, we see the average planned running time is expected to be 25 minutes between the two stops (on R863 University Road and on the R338 Dublin Road) but the average is actually 38 minutes (a 53% increase), with 75% of buses reaching the 2nd stop within 57 minutes (131% increase) and 95% of buses reaching the 2nd stop within 71 minutes (187% increase). This data demonstrates that 1 in 4 buses take approximately an hour or more to complete a scheduled 25-minute journey in the evening peak hour.

The above diagrams demonstrate the volatility of Galway City Centre traffic patterns. This level of uncertainty is currently a barrier to mode shift due to the high degree of variability around a potential journey time.

Adopting a Do-Nothing approach to infrastructure improvements would therefore most likely result in an exacerbation of the problems arising from bus priority discontinuity – such as delayed buses and unreliable journey times. The capacity and potential of the public transport system would remain restricted by the existing deficient and inconsistent provision of bus lanes and the resulting sub-standard levels of bus priority and journey-time reliability. As such, in addition to the continuation of issues relating to existing bus services, all future bus services, including the proposed Galway Bus Network Redesign, would also suffer from the same lack of journey-time reliability. This would severely impact the attractiveness of public transport as an alternative to private car usage for those who need to travel to/from various locations into and through Galway City.

Similarly, without appropriate investment in the provision of safe cycling infrastructure and a congestion free, traffic calmed street network in the core city centre area, cycling uptake in Galway, which was previously regarded very much as a cycling city, will continue to stagnate.

The same applies to the need for sufficient investment in public realm and facilities for pedestrian movement. With a “Do Nothing” Alternative, there would not be significant strategic investment in improvements to the pedestrian environment. Rather, improvements would be limited to relatively limited interventions, for example, ongoing maintenance of existing footpaths and adjacent public spaces. The “Do Nothing” alternative would not result in improvements to encourage more journeys generally at a local level by active travel, including connecting to and from bus stops for all pedestrians, and in particular improving facilities for the mobility and visually impaired.

For all these reasons, a Do-Nothing alternative is not considered to be a viable alternative relative to the outcomes which can be realised by the Proposed Scheme.

3.2.3 Transport Options

3.2.3.1 System Choices

While there is considerable orbital daily travel demand around the city centre, for example between residential areas to the west of Galway and employment centres such as Ballybrit and Parkmore to the east, there are also very significant generators of travel demand within, and in proximity to the city centre area including the city centre retail core itself and social amenities such as the Hospital, NUIG and the Sports Grounds. It is therefore clear that a public transport network of services is required to provide for sufficient attractive accessibility to public transport for the widest population catchment possible.

The GTS utilised the Western Regional Model (WRM) to look at the potential for use of public transport services along the busiest movement corridors in Galway. This exercise identified that with high-frequency (and unconstrained) services in place, the maximum single direction passenger-demand generated was approximately 1,000 trips over a 1-hour period, equivalent of 80-90% of a high frequency bus service or less than 25% of the capacity of a frequent light rail service.

Any new public transport network proposed for Galway also needs to be cognizant of the vibrant nature of the city centre, to allow it to ‘breathe’ by removing traffic congestion and to create an attractive environment for people to access and move around. This is the concept behind the ‘Cross-City Link’ identified in the GTS and as illustrated in Diagram 3.6. The ‘Cross-City Link’ is denoted as the blue Bus Priority / Bus Only Route in the diagram.

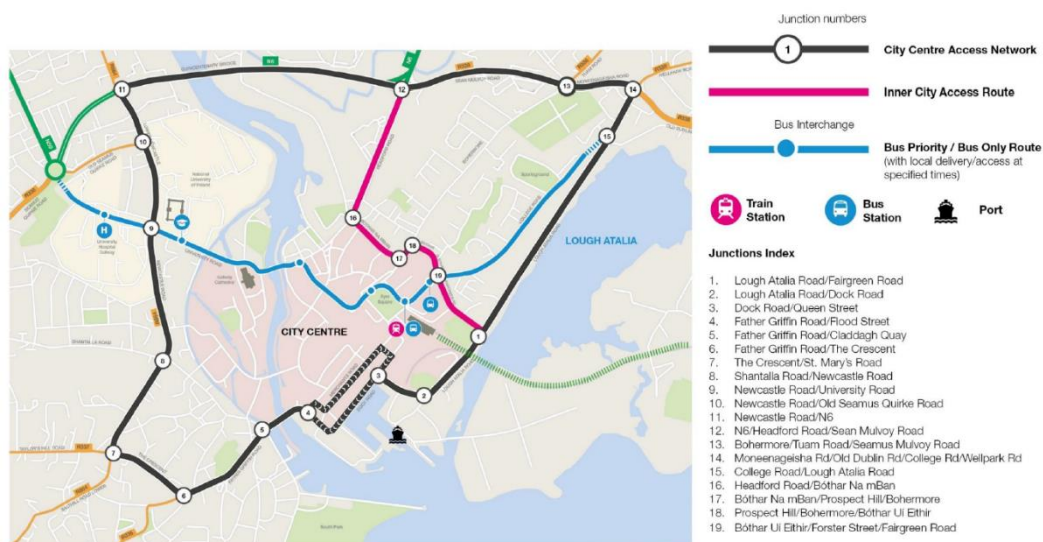


Diagram 3.6: Cross-City Link and City Centre Routes identified in Galway Transport Strategy

3.2.3.2 Bus Alternatives

Current bus services along routes serving Galway City and its environs are presented in Diagram 3.7 with further detail provided in Section 6.4.2 of Chapter 6 (Traffic and Transport) of this EIAR.

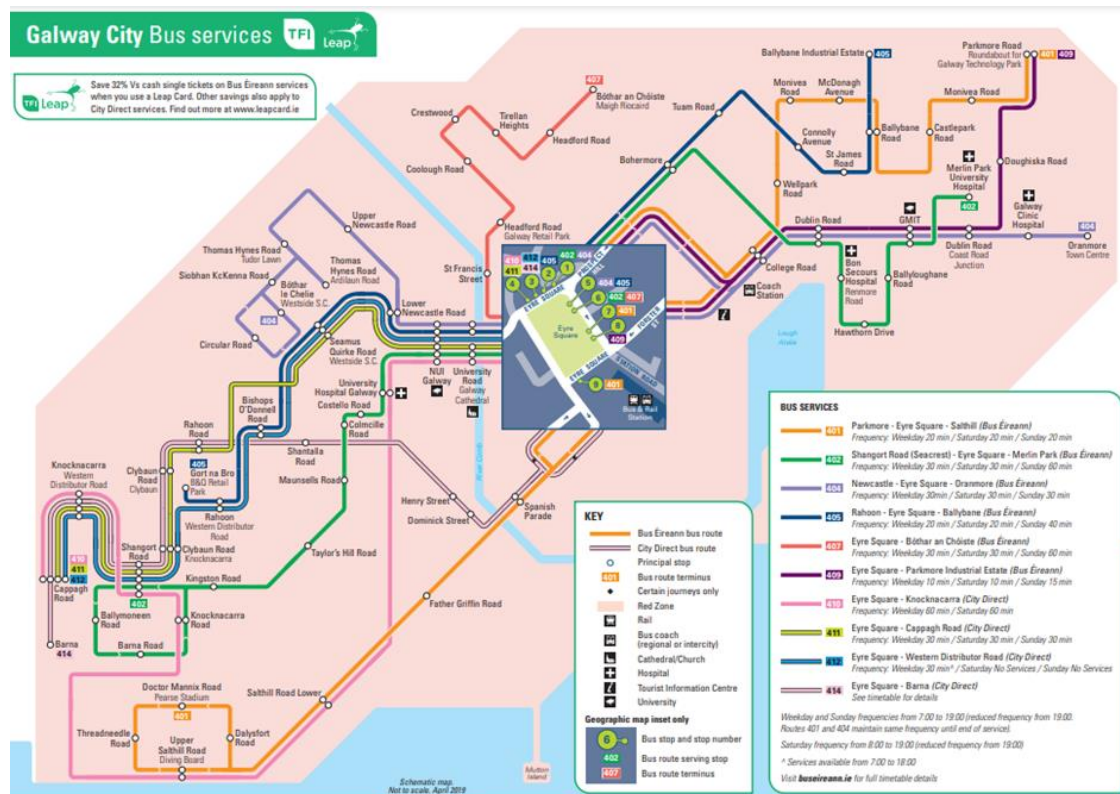


Diagram 3.7: Existing Galway City Bus Services (Source: Transport for Ireland)

The GTS identifies proposals for a revised future rationalized network of higher frequency bus services as illustrated in Diagram 3.8.

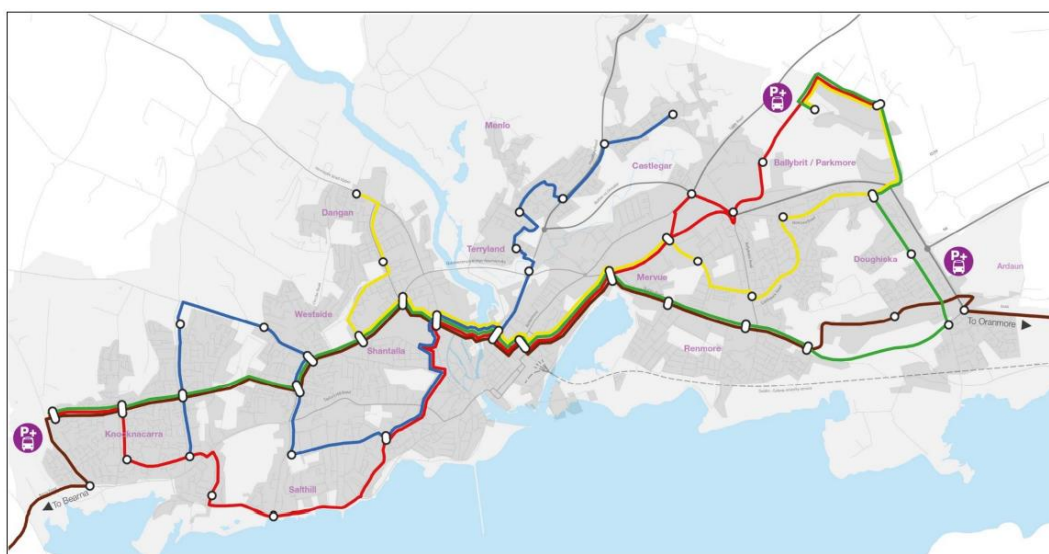


Diagram 3.8: Proposed Galway City Bus Services (Source: Galway Transport Strategy)

The bus network identified in the GTS was seen to deliver up to 70% of residential, and between 72-93% coverage of commercial and primary and post primary schools with access to a high-frequency bus service.

These services, any variations thereof or further new services which route through the city centre, need to be supported by measures which ensure improved journey times and journey time reliability throughout the day. In doing so, measures adopted for bus services through the city centre do not preclude the potential for other services and supporting journey time reliability measures on other routes to cater for public transport demands into the future.

The concept for the Cross-City Link therefore was to focus on the provision of infrastructure and supporting traffic management measures necessary to cater for existing and future bus services, which either approach and terminate in the city centre from the east and west or run through the city centre from either direction.

In terms of bus service alternatives, Bus Rapid Transit (BRT) has emerged in recent years as an effective, cost efficient and high-quality public transport system. As BRT is a relatively new mode of transport, there are various definitions and interpretations as to what BRT comprises and there are many different forms of BRT systems in operation worldwide. Definitions of BRT range from a Quality Bus Corridor (QBC) to being a fully guided, fully segregated bus system.

The Proposed Scheme is therefore required to be sufficiently flexible to support different bus vehicle types, although there are no current plans in terms of the public bus fleet to provide either guided or fully segregated bus systems. These may require further additional infrastructure provision later should they ever be required to service changes in travel demand into the future.

3.2.3.3 Light Rail Alternatives

As Set out in Section 3.2.3.1 of this chapter, the GTS identified a core need for the delivery of a public transport network with coverage to provide accessibility to alternative sustainable transport services to a significantly greater percentage of the low-density population catchments of the city and environs.

The appropriate type of public transport service provision is predominately determined by the likely quantum of passenger demand along any public transport route. The relatively low levels of demand to be served on routes, as also set out in Section 3.2.3.1, results in the clear need for bus services to be a key part of any integrated transport network for Galway currently, and into the future.

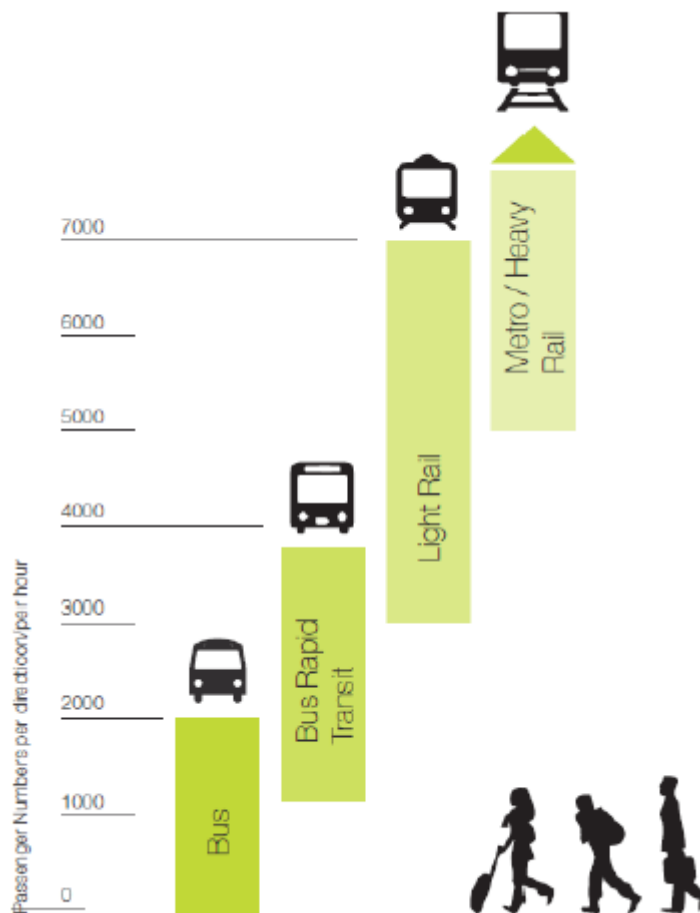


Diagram 3.9: Public Transport Mode Capacities (Source: GTS)

As illustrated in Diagram 3.9, for urban transport systems, bus-based transport is the appropriate public transport mode for passenger demand levels of up to 4,000 passengers per hour per direction (UITP 2009). Light rail provision would generally be appropriate to cater for higher passenger demand of between 3,500 and about 7,000 passengers per hour per direction. Passenger demand levels above 7,000 passengers per hour per direction would generally be catered for by heavy rail or metro modes, which would usually be expected to serve numerous major origins or destinations along a particular corridor.

In the case of both the bus and light rail modes, higher levels of passenger demand than the above stated diagrams can be accommodated under specific conditions.

The GTS recognised this when looking at network options versus linear mass transit options. This does not preclude the potential for corridor approaches to emerge into the future, linked to more intense land-use development planning which would give rise to the potential to be served by light rail.

Therefore, based on existing population demographics and any future development likely to emerge from current statutory land-use plans (i.e., the Galway City and County Development Plans), there would be insufficient demand to justify the provision of a light rail network alternative, particularly given the low to medium density nature of development along, and from existing corridors

feeding into city centre. The same reasoning also applies to even higher mass transit options such as metro or heavy rail.

3.2.3.4 Rail Integration

Galway is serviced by heavy rail, with inter-city and regional services connecting into Ceannt Station. The rail line extends east to Athenry, with a stop at Oranmore / Garraun. From Athenry, rail lines continue towards Dublin and to Limerick.

Irish Rail intend to carry out an upgrade to the rail network serving Galway City through the provision of a second rail line between Galway and Athenry to provide a twin-track along this section. At the time of writing a feasibility study is in the process of being prepared for this proposed project.

In considering options for the Cross-City Link in the GTS, a key objective was to deliver improved transport integration between regional and local bus services and the rail station in the city centre at Ceannt Station.

3.2.3.5 Demand Management Alternatives

One of the key overarching objectives of the GTS is to significantly reduce the reliance on private car usage to meet travel demand, particularly during the commuter peaks, and to encourage use of walking, cycling and public transport. One of the mechanisms to achieve such a reduction of private vehicle use is the introduction of measures to discourage travel by car – i.e., demand management.

Demand management can take many different forms, from restricting car movement or car access through regulatory signage and access prohibitions, to parking restrictions and fiscal measures (such as tolls, road pricing, congestion charging, fuel/vehicle surcharges and similar). All these approaches discourage car use through physical means or by adding additional costs to car use, such that it becomes more expensive and alternative modes become more attractive. A key success factor of demand management is greater use of alternative travel modes, in particular public transport. This assumes of course that alternative reliable public transport services exist.

Applying this to Galway City Centre, there is also a balance to be struck in terms of retaining accessibility to the city centre area for cars, while increasing accessibility by public transport, and in doing so, also planning for and facilitating the overall increased accessibility and economic activity in the city. The strategic traffic management aims identified in the GTS relating to the city centre therefore are:

- To reduce through-car movement and traffic speeds in the city centre; and
- To prioritise public transport movements in the city centre.

To achieve this, the GTS identifies the need for an improvement in orbital routes around the core city centre area to both reduce through travel by cars and HGVs while at the same time retaining access to city centre car parks combined with a

reduction in on-street parking in some locations to allow for improved public realm.

The resulting the Galway City Centre Access Network identified in the GTS is presented in Diagram 3.10.

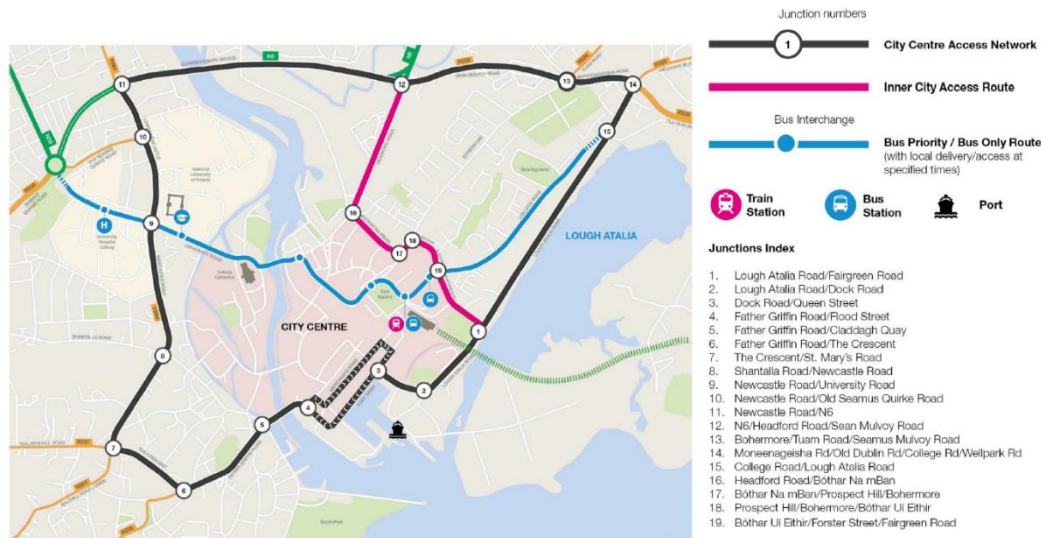


Diagram 3.10: City Centre Access Network (Black Route) and Inner City Access Route (Pink Route) (Source: GTS)

In delivering elements of the GTS related to the city centre through a phased approach, it is clear therefore that some demand management measures will be needed in combination with, and to support enabling infrastructure projects. In the case of the Cross-City Link therefore, there is a need to include elements of the 'Inner City Access Route' to improve orbital movement and retain or improve access to key city centre car parks.

3.2.3.6 Technological Alternatives

Technological advances have opened-up new areas of potential in the delivery of transportation infrastructure. Driverless trains and smart highways are two examples. Some of these initiatives, such as driverless trains, are now in use.

However, there is no evidence that such developments will displace the need for mass transit, which is essential to the operation of a modern city. Accordingly, the need to improve the overall bus system will remain.

In addition, the spectrum of potential technological capabilities does not obviate the need for the provision of safe cycling facilities and improved public realm and walking routes for pedestrians.

Overall, while certain technological advances do provide new opportunities in the transport area, particularly around information provision, they do not yet provide viable alternatives to the core need to provide for the movement of more people by non-car modes, including the provision of safe, segregated cycling facilities. Accordingly, there are no viable technological alternatives on their own to meet the transport needs of Galway city and environs.

The GTS identifies Smarter Mobility as how intelligent transport services are changing the way cities function. Intelligent Transport Solutions (ITS) use technology to increase efficiency, safety and co-ordination across transport networks. The GTS proposes Smarter Mobility policies and states that ITS will be used to support and future-proof proposed infrastructure, implement changes and add value to the operation of the transport network by maximising efficiency and ensuring the optimum performance of the entire network. The GTS categorises Smarter Mobility projects into three broad groups:

- Projects which provide additional capacity to the transportation network;
- Projects which incorporate demand management; and
- Projects which utilise intelligent systems to deliver overall efficiency and cost savings.

The Cross-City Link developed within the GTS is considered to be a project that falls into all three categories of Smarter Mobility.

3.3 Walking and Cycling Integration

3.3.1 Walking and Public Realm

The Cross-City Link is intended to be about much more than improving bus and integrated public transport services. It also needs to be a catalyst for the creation of a more walkable and cyclable city and to connect ‘places’ within the city centre area.

The GTS identifies a series of aims and measures to provide a basis for developing plans and infrastructure proposals to better provide for pedestrian movement. These aims are:

- To provide improvements for pedestrians along city centre public transport corridors;
- To increase priority given to pedestrians over road traffic;
- To increase legibility and wayfinding;
- To increase the quality, comfort and safety of the pedestrian facilities.

Consideration of alternatives for the Cross-City Link, both at GTS preparation stage, and in subsequent route and design development stages were required of these aims which ultimately shape the Proposed Scheme and all other projects emerging from the GTS.

Specifically in relation to public realm, Galway City Council is committed to delivering a public realm strategy.

The Galway Public Realm Strategy (GCC, 2019) explores the current condition of central Galway’s townscape and network of public and green spaces and sets out a vision and strategy for improvements to guide investment and development in the future. The Strategy looks to further the previous innovative steps which have already been taken, such as creating the pedestrianised zone (Shop Street),

investment in the Fish Market and Eyre Square, and the opening of the Corrib riverside walk.

The Galway Public Realm Strategy provides a vision of place, design guidance and outline project proposals to improve Galway's streets and public spaces. The design response is specific to the location, history and character of Galway City. The overriding aim is that this strategy contributes to making the whole of Galway as good as its best parts, not just to improve the look and feel of the public realm but mainly to support liveability and through that the life and prosperity of the city.

Making the centre as welcoming and accessible to everyone as possible forms a fundamental layer within the strategy. The Galway Public Realm Strategy promotes universal design to help open up the city centre to all and make getting into and moving around the centre much easier. The strategy will help the city centre better cater for old and young in particular and include provision for more seating and more play opportunities.

The GTS seeks to redress the balance in favour of pedestrians and cyclists over vehicular traffic and the Galway Public Realm Strategy seeks to capitalise on this by creating a high-quality public realm, made possible by reducing the dominance of car traffic and upgrading the quality of the physical fabric, hard and soft. There are also a number of opportunities to create new space out of existing road / street and parking areas including at Woodquay and Small Crane which could be transformed to deliver much needed additional high quality and characterful public realm without significantly reducing the availability of car parking in the city centre. There are a number of major development initiatives on the edges of the city centre, including Ceannt Station and the Harbour Regeneration Area, through the Nun's Island masterplan, and the Headford Road Regeneration Area. These present opportunities to deliver new public spaces and public realm which individually, and certainly when considered together, will add significantly to the city's public realm. It is a key objective of the Public Realm Strategy to clearly set out the design context for these and to define the network of spaces and routes in which these new spaces will sit and interconnect with.

In the context of the Cross-City Link project and its ability to better connect places, when considering alternatives at design development stages, cognisance was given to the opportunities for public realm enhancement identified in the Galway Public Realm Strategy where appropriate to do so.

3.3.2 Cycling

The GTS identifies a series of aims and measures to provide a basis for developing plans and infrastructure proposals to better provide for cycling. These aims are:

- To provide a primary 'trunk' cycle network which will provide a convenient and safe route for medium-distance radial commuter / leisure journeys;

- To provide a secondary cycle network which will provide a recognizable grid network for local journeys, and will be connected to the primary network for longer journeys’ and
- To increase options for cycling in and across the city centre.

Consideration of alternatives for the Cross-City Link, both at GTS preparation stage, and in subsequent route and design development stages took cognisance of these aims which ultimately shape the emerging Proposed Scheme and all other projects emerging from the GTS.

3.3.3 Initial High Level Route Alternatives

In the formulation and subsequent assessment of route options for the Cross-City Link as part of the GTS, as set out earlier, cognisance was taken of both existing and future planned bus routes and services. In terms of identifying a primary route through the city centre, high level options assessment concentrated on the existing limited bridge crossings over the River Corrib and the need to remove traffic congestion from the core city centre area while providing appropriate balanced alternatives for east-west orbital movement of traffic. The Quincentenary Bridge to the north of the city currently acts as the primary National and Regional Road link for east west traffic movement. By removing more traffic from the city centre, it pushes more onto this bridge and ultimately the proposed Galway City Ring Road (also proposed as a scheme under the GTS) further out. The relative changes in traffic volumes across the Corrib bridge crossings identified in the GTS are illustrated graphically in Diagram 3.11.

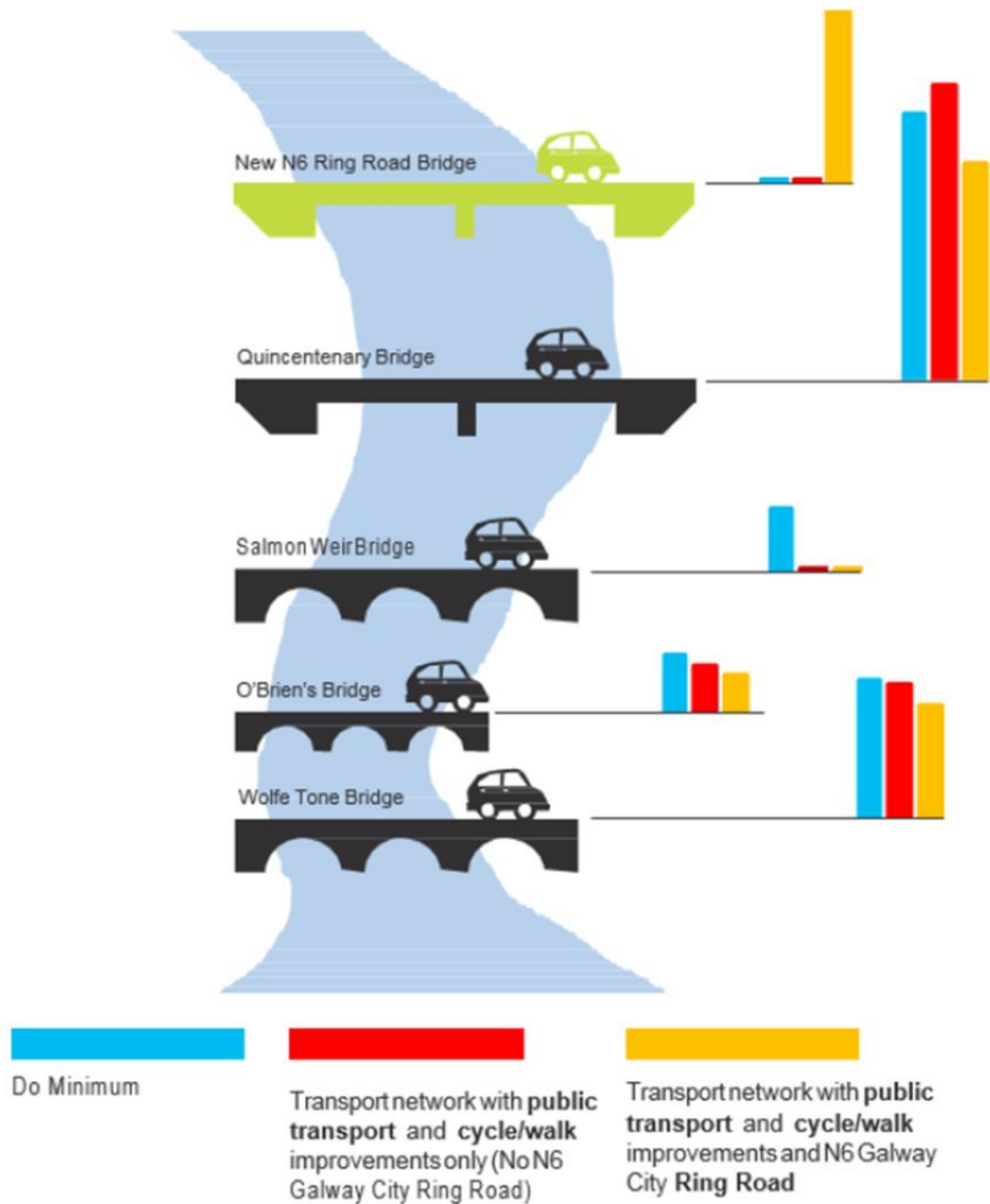


Diagram 3.11: Peak Hour Vehicle Flows across Corrib Bridges (Source: GTS)

Of the existing bridges in the city centre, the Salmon Weir bridge is considered as the most attractive for running most public transport services across and through the city centre, routing existing and new services in closest proximity to key trip attractors or generators including NUIG and University Hospital. An illustration of changes in movement across the Salmon Weir Bridge from the modelling undertaken in support of the GTS is presented in Diagram 3.12.

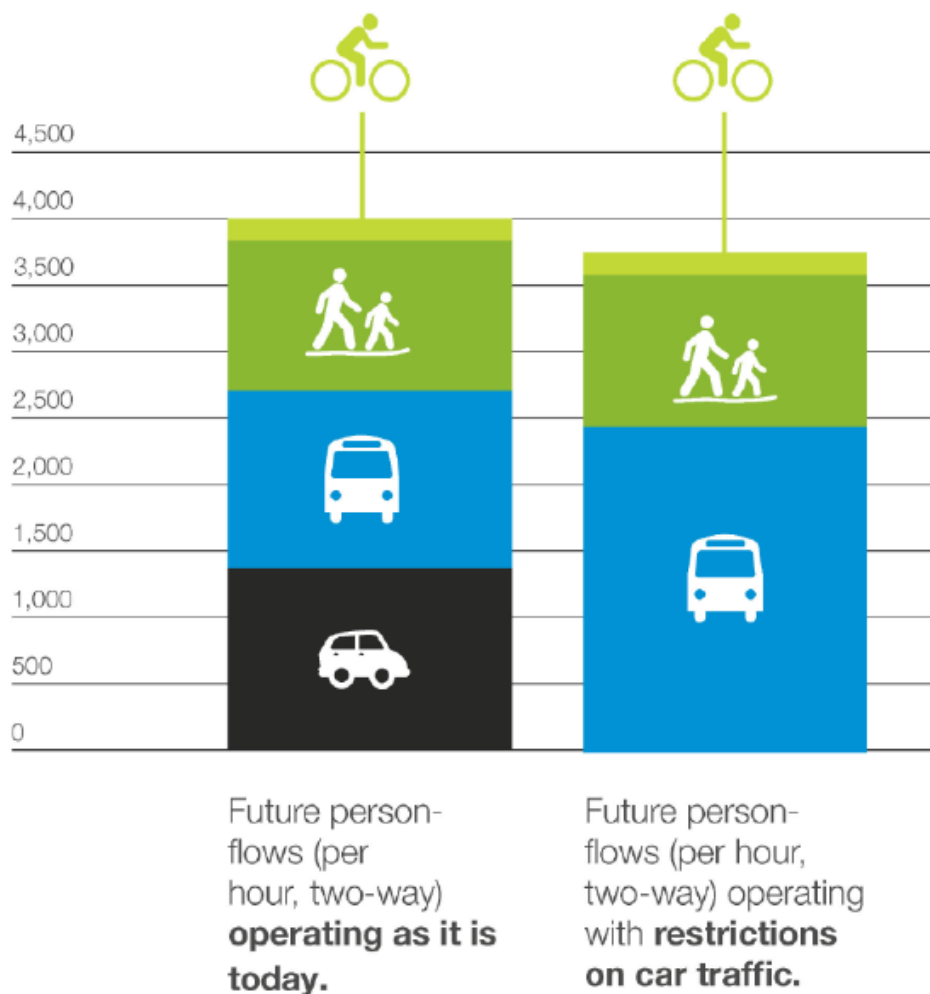


Diagram 3.12: Peak Hour Person Flows across Salmon Weir Bridge – existing vs proposed (Source: GTS)

3.3.4 Strategic Environmental Assessment of Alternatives

The preparation of the GTS was subject to Strategic Environmental Assessment (SEA). Article 1 of SEA Directive (2001/42/EC) states that the ‘objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.’

SEA is a process for evaluating, at the earliest appropriate stage, the environmental quality and consequences of Plans / Programmes (PP). The purpose is to ensure that the environmental consequences of Plans / Programmes are assessed during their preparation and prior to their completion and the effect of the implementation of Plans / Programmes may also be subject to monitoring.

The SEA process also gives interested parties an opportunity to comment on the environmental impacts of the proposed Plan / Programme and to be kept informed during the decision-making process.

The SEA Environmental Report included an assessment of various alternative approaches for the GTS, comprising:

- The do-minimum approach;
- Prioritisation of a road transport based approach;
- Prioritisation of a public transport based approach;
- An integrated transport-based approach.

The assessment of alternatives approaches found that the integrated transport-based approach as detailed in the GTS has the preferred outcome in terms of effectiveness and overall environmental benefit.

3.3.5 GTS Outcomes

The GTS identifies the outcomes by which the successful implementation of the strategy can be measured. These are:

- Future-proofing the city – to ensure Galway can continue to grow as an economic and cultural centre in the West of Ireland, the draft strategy frames the future transport needs of the city and its environs, in terms of walking, cycling, public transport and Strategic Road provision. Specifically listed under this outcome is the Cross-City Link and ensuring it is introduced to increase the amount of people able to access the heart of the city by public transport;
- Improved efficiency of the overall transport network by optimising the use of limited city centre road space, thereby facilitating a greater degree of access to the city;
- Improved environment, urban realm and ambience – enhancing the streetscape of the city centre, reducing noise and air pollution and freeing up more space where people can walk, shop, socialise and enjoy the city; and
- Tourism, commercial and retail benefits - improving the overall commercial/retail and tourist environment of Galway, with additional transport capacity for shoppers and visitors accessing the city centre and key tourist locations such as Salthill Promenade and Galway Racecourse.

3.4 Route Scheme Alternatives

3.4.1 Scheme Options Assessment Sections

With the GTS broadly establishing the route through the City Centre for the Cross-City Link, the next stage in the Proposed Scheme development process was to look in more detail at potential scheme level route variants.

For the purpose of development of route level scheme options and assessment of same, the Cross-City Link and Inner-City Access routes were sub-divided into a number of sub-sections. In addition to the Cross-City Link and the Inner-City Access Route, other city centre streets and routes were assessed in terms of impact and modifications needed arising from the creation of a bus priority corridor along the Cross-City Link.

The scheme study area considered comprises the Cross-City Link from R863 University Road to R338 Dublin Road and the Inner-City Access Route from Headford Road to Lough Atalia Road, together with impacted adjacent streets including Woodquay, Waterside, Newtownsmith, R336 Merchants Road and Forthill Street.

For the purposes of options assessment, these have been divided into the following sub-sections:

For the Cross-City Link:

- Sub-Section 1 - R863 University Road to R866 St. Francis Street;
- Sub-Section 2 - R866 St. Francis Street and R866 Eglinton Street;
- Sub-Section 3 - R866/R336 Eyre Square to R339 Forster Street;
- Sub-Section 4 - R339 College Road (R339 Forster Street to Lough Atalia Road);
- Sub-Section 5 - R339 College Road (Lough Atalia Road to Moneenageisha Junction);
- Sub-Section 6 - R338 Dublin Road.

For the Inner-City Access Route:

- Sub-Section 7 - Fairgreen Road;
- Sub-Section 8 - Bóthar Uí hEithir and R336 Prospect Hill;
- Sub-Section 9 - Bóthar na mBan / St. Brendan's Avenue / R866 Headford Road / Dyke Road.

For the impacted adjacent streets:

- Sub-Section 10 - Woodquay / Walsh's Terrace / Daly's Place / Mary Street; and
- Sub-Section 11 - Forthill Street / R336 Merchants Road / Queen Street.

The Proposed Scheme sections are illustrated in Diagram 3.13.

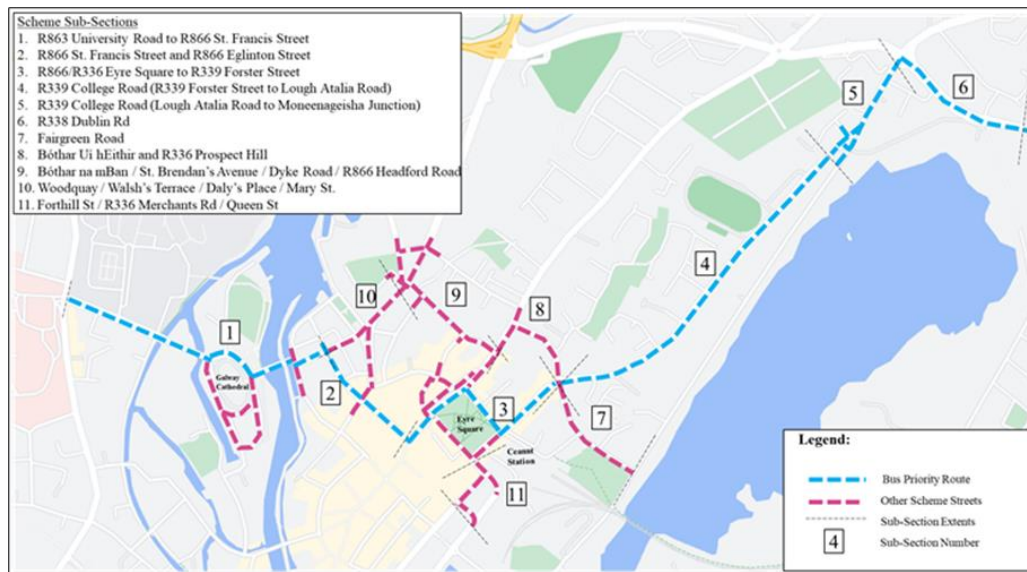


Diagram 3.13: Proposed Scheme Sections

The start and end points considered represent logical break points in the context of identifying the extremities of a Proposed Scheme and that of other projects which would follow and could be phased independently under the GTS.

The University Road / Newcastle Road junction was chosen as the extremity of the scheme to the west due to this being the location where all 5 GTS bus routes converge onto a single corridor and this represents a logical start point for the Cross-City Link. A future scheme is proposed to address connectivity from University Road to the Seamus Quirke Road, potentially via University Hospital Galway.

The Dublin Road was chosen due to constraints on the transport network at Moneenageisha junction. The Cross-City Link and the City Centre Access Network overlap along College Road, between Lough Atalia Road and Moneenageisha junction. However, regular delays are experienced for all vehicles passing through the Moneenageisha junction in all directions, with downstream queuing observed in particular in the PM peak. The benefits of the Cross-City Link will be maximised by providing bus priority through this junction. The GTS identified a bus priority corridor along the Dublin Road from Moneenageisha junction to the Martin Roundabout. By extending the Cross-City Link scheme onto Dublin Road, the Cross-City Link can avail of the bus journey time benefits that will be achieved through the Moneenageisha junction and provide an interface with any future scheme along the Dublin Road, however a future scheme would not be a pre-requirement for the Cross-City Link scheme to accrue benefits for public transport.

The Lough Atalia Road junction with Fairgreen Road represents one end of the Inner-City Access Route. This was chosen as the extent of the Cross-City Link scheme, due to the restrictions placed along the Cross-City Link for general traffic. It is expected the traffic volumes along Fairgreen Road and the Inner-City Access Route will increase with the introduction of the Cross-City Link.

The Headford Road / Dyke Road was chosen as the other end of the Inner-City Access Route to be included in this scheme. This was chosen due to the requirement to convert Fairgreen Road, Bothar Ui Eithir, Prospect Hill, Bothar na mBan and St. Brendan's Avenue a two-way link along its length, due to the restrictions placed along the Cross-City Link for general traffic. With the Cross-City Link in place, access to numerous car-parks along the Inner-City Access Route will be required to be maintained. The most significant current constraint on this route for traffic and pedestrians is at St. Brendan's Avenue and Headford Road. It is expected that the traffic volumes at this junction will increase with the introduction of the Cross-City Link. This is also the location where one of the GTS bus routes intersects with the Inner-City Access Network. The section of the Inner-City Access Route along Headford Road, between St. Bridgits Place and the N6 Bothar na dTreabh will likely be subject to another future scheme to be developed by Galway City Council to address the demands of all modes along that corridor.

The Merchants Road, Forthill Street and Dock Road junctions were chosen at the extremities of the scheme to the south west, as this is the location where access to Eyre Square and the Cross-City Link will be impacted. As Eyre Square will no longer be a through-route, vehicle demand to access Eyre Square will reduce significantly, requiring a realignment of Merchants Road onto Forthill Street onto Dock Road.

Similarly at Walsh's Terrace, Woodquay, Dalys Place, these streets will no longer form part of a through route and will become local access only, hence changes to the layout of these streets will be necessary to facilitate the implementation of the Cross-City Link.

3.4.2 Route Scheme Options Assessment Process

3.4.2.1 Assessment Criteria

Utilising the Common Appraisal Framework for Transport Projects and Programmes' (CAF) published by the Department of Transport, Tourism and Sport (DTTAS), (March 2016), assessment sub-criteria were developed and a Multi-Criteria Analysis (MCA) carried out on options to determine the preferred scheme option within each sub-section along the route of the Proposed Scheme.

The CAF requires schemes to undergo a MCA under the following criteria;

- Economy;
- Integration;
- Accessibility and Social Inclusion;
- Safety;
- Environment; and
- Physical Activity.

In addition to the CAF criteria above, an additional criterion was applied to the Proposed Scheme in order to examine how each option aligns with Galway City Council's policies as set out in the GTS. The addition criterion titled GTS Policies was developed.

Utilising the CAF assessment criteria, a number of assessment sub-criteria have been identified for each of the three elements. As any options selected for any of the elements will have a direct impact on the other elements, the same sub-criteria are proposed across each section (and sub-sections).

Table 3.1 presents a summary of the assessment criteria and sub-criteria used as part of the detailed route scheme options assessment process. An explanation of each sub-criteria utilised is provided in Section 3.4.2.2.

Table 3.1: Summary of Route Scheme Assessment Sub-Criteria

Assessment Criteria	Assessment Sub-Criteria
1. Economy	1.a. Capital Cost
	1.b. Transport Reliability and Quality (Public Transport Journey Time)
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)
2. Safety	2.a. Pedestrian User Safety
	2.b. Cyclist User Safety
	2.c. Public Transport User Safety
	2.d. Other Road Vehicles User Safety.
3. Physical Activity	3.a. Promotion of Active Travel Modes
4. Environment	4.a. Archaeology and Cultural Heritage
	4.b. Architectural Heritage
	4.c. Flora & Fauna
	4.d. Soils and Geology
	4.e. Hydrology
	4.f. Landscape and Visual
	4.g. Air Quality
	4.h. Noise & Vibration
	4.i. Land Use Character
5. Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors (Education/Health/Transport/Commercial/Employment)
	5.b. Mobility Impaired User Benefits
6. Integration	6.a. Public Transport Network Integration
	6.b. Cycle Network Integration
	6.c. Road Network Integration
7. GTS Policies	7.a. Efficient and Reliable public transport to and through the city centre
	7.b. Enable Traffic to access and move around the city centre.

Assessment Criteria	Assessment Sub-Criteria
	7.c. Provision of Access to existing facilities
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the route.
	7.e. Removal of non-essential motorised traffic from core city centre.

3.4.2.2 Assessment Sub-Criteria

A set of sub-criteria were used to comparatively evaluate the options. A brief outline of each of the sub-criteria identified in Table 3.1 are provided in this section.

3.4.2.2.1 Capital Cost

This sub-criterion is established to assess design options for their likely capital infrastructure cost. Each route option will be assessed relative to the nature and extent of infrastructure works requirements to deliver the scheme objectives. Capital cost estimates consist of both the indicative infrastructure cost estimate and land acquisition costs.

3.4.2.2.2 Transport Reliability and Quality (PT Journey Time)

This criterion assesses options along the Cross–City Link in terms of the degree to which public transport reliability and quality of service is likely to be achieved. The assessment considers journey time and the number of major junctions.

3.4.2.2.3 Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)

This criterion assesses options in terms of the degree to which pedestrian infrastructure and cyclist quality of service is likely to be achieved. The assessment considers the following:

- The width of pedestrian footways;
- The frequency of pedestrian crossings;
- The control type of pedestrian crossings;
- The level of service for cyclists;
- The necessary interactions between pedestrians, cyclists, buses and vehicles.

3.4.2.2.4 Transport Reliability and Quality (All Vehicles Journey Time)

This criterion assesses options in terms of the degree to which private traffic journey time consistency is likely to be achieved.

The assessment will consider the delay associated with traffic volumes along these routes based on link and junction options and estimated traffic volumes associated with alterations to the entire transport network.

3.4.2.2.5 Pedestrian User Safety

All route and scheme options would be designed to a similar standard where possible (e.g. footpaths throughout, pedestrian crossings at junctions and in the vicinity of bus stops). However, as pedestrians are the most vulnerable road users and would include those with impaired mobility, it is prudent to analyse each action in terms of the impact upon pedestrian safety.

For example, where road widening may be required for the provision of bus lanes, additional traffic lanes, or on-street parking/loading, if this is to be at the expense of footpath width it would impede pedestrian accessibility. Similarly, such works could result in wider crossing widths for pedestrian at controlled and/or uncontrolled pedestrian crossings.

3.4.2.2.6 Cyclist User Safety

Given the overall objective along the Cross-City Link being improved bus priority, there will likely be cases of reallocation of road space from private car to public transport or the provision of new bus lanes through road widening. In either case it is likely that cyclists will end up sharing the roads with both vehicular and bus traffic.

Therefore, for the purposes of comparing options, the number of conflicting road users along the route has been used as a proxy for road safety. The number of conflicting road users is effectively a measure of the number of potential conflicts on the route and therefore a measure of the potential for a collision. Similarly, the number of instances whereby a cyclist may have to change between cycle lanes, traffic lanes, and bus lanes would also be a safety consideration due to the requirement to merge with other road users.

Benefits to be considered would generally relate to provision of full cycle facilities along routes, cyclist friendly junction types (e.g. fully signalised junctions or protected cycle lanes), and dedicated toucan or cyclist crossing facilities at junctions and key cyclist desire lines.

3.4.2.2.7 Public Transport User Safety

With the overall objective along the Cross-City Link being improved bus priority, there will likely be cases of reallocation of road space from private car to public transport, and the number of conflicting road users is effectively a measure of the potential for collisions.

Therefore, the number of instances whereby buses will be required to change between bus lanes and traffic lanes would be a safety consideration due to the requirement to merge with other road users.

Similarly, with increased emphasis on bus priority there will likely be more cases of two-way bus corridors, and as such the geometry of the existing roads and junctions must be taken into consideration to ensure the required movements are feasible.

Along with the safety considerations associated with buses on the road, this element must also consider the safety of the public transport users in getting to and from the bus stops. This will largely be linked to the Pedestrian User Safety considerations.

3.4.2.2.8 Other Road User Safety

Generally, with the introduction of improved bus priority on the Cross-City Link there is a potential for a reduction in road accidents due to people switching from private car to a better public transport offering. However, this cannot be guaranteed, and as stated, the number of conflicting road users is effectively a measure of the potential for collisions.

Therefore, for the purposes of comparing options, the number of conflicting road users along the route has been used as a proxy for road safety. The number of conflicting road users is effectively a measure of the number of potential conflicts on the route and therefore a measure of the potential for a collision.

As well as this, general safety benefits could be achieved through general traffic calming measures introduced at junctions and along routes. Similarly, with the increased bus priority it is likely that current through routes may be converted into local access routes, which in itself could act as a traffic calming measure.

3.4.2.2.9 Promotion of Active Travel

This criterion will assess the likelihood of options to encourage additional participants in active travel including:

- Those who would change their primary mode of travel from private car to walking;
- Those who would change their primary mode of travel from private car to cycling; and
- Those who would change their primary mode of travel from private car to public transport (and hence pedestrian for part of their journey).

3.4.2.2.10 Environmental

The scope and methodology proposed for the environmental assessment was established by considering what environmental aspects are likely to be impacted and are therefore of importance in evaluating the options. Based on this, the following environmental parameters were scoped out of the Environmental Assessment:

- **Agronomy:** Given the urban/suburban nature of the proposed scheme and the assumption that most interventions will likely take place on existing road infrastructure this aspect is not considered to be relevant to the assessment;
- **Hydrogeology:** Hydrogeology is not considered to be a determining factor in the selection of the preferred options;
- **Property/Land Acquisition:** This aspect has been considered separately as part of the Economy criterion in the overall multi-criteria analysis commensurate with the information available at the route option assessment stage; and
- **Socio-economics:** Elements of socio-economics such as journey times, catchment analysis, transport integration, quality of service for cyclists etc. are assessed under other non-environmental criteria and are therefore considered and captured elsewhere as part of the multi-criteria analysis.

3.4.2.2.11 Archaeological, Architectural and Cultural Heritage

The provision of transport infrastructure has the potential to impact on the archaeological, architectural and cultural heritage environment. At the options assessment stage of the assessment, the exact nature and extent of potential impacts cannot be fully determined for all options assessed.

For the purposes of this assessment heritage features of archaeological, architectural and cultural heritage significance along or immediately adjacent to the route are identified and mapped. Impacts associated with each option are then compared and ranked in order of preference.

- Features considered included the following:
- Sites recorded on the Record of Monuments and Places (RMP sites);
- Sites recorded on the Record of Protected Structures (RPS);
- Sites recorded on the National Inventory of Architectural Heritage (NIAH);
- Areas of Archaeological and Cultural Heritage Merit;
- Architectural Conservation Areas (ACAs) and other sites / areas of Architectural Heritage Merit;
- Sites/areas of archaeological potential and recently identified archaeological sites;
- Conservation Areas; and
- Greenfield areas with unknown archaeological potential.

3.4.2.2.12 Flora and Fauna

The provision of transport infrastructure has the potential to impact on flora and fauna. A broad assessment of the likely impacts of each of the options on the key ecological receptors will be undertaken, with an indication as to which, if any, of these are likely to be significant, and at what geographical level. The impacts will be compared to allow an order of preference to be determined. Features to be considered include the following:

- Records of rare or protected plant species;
- Records of protected fauna;
- Identified designated ecological areas and other areas of ecological importance, including ecological corridors and areas of green infrastructure; and
- Watercourses and fisheries waters.

3.4.2.2.13 Soils and Geology

The provision of transport infrastructure has the potential to impact on soil and geology as a result of land-take and possible ground excavation (including potential to encounter ground contamination).

Attributes and impacts to be assessed for each route option include the following (where relevant):

- Historic land use and potential contamination;
- Geology/Areas of geological significance;
- Soil quality, drainage characteristics and range of agricultural uses of soil along each route corridor; and
- Potential implications for existing quarrying or mining activities and future extractable reserves.

3.4.2.2.14 Hydrology

The provision of transport infrastructure has the potential to impact on surface water bodies as a result of land-take (with particular emphasis on floodplains and flood zones).

Attributes (and impacts) to be assessed for each route option include the following (where relevant):

Watercourses crossed by each element, and potential impact on water quality arising from any re-alignment works;

- Discharge to receiving waters and drainage network;
- Aquatic ecological sites close to and downstream of water crossings;
- Surface water abstraction close to and downstream of water crossings;
- Established amenity value of surface waters traversed by each route corridor, and
- Potential increase (or reduction) in flood risk to existing properties.

3.4.2.2.15 Landscape and Visual

The provision of transport infrastructure has the potential to impact the townscape/streetscape along the routes. The assessment will comprise the compilation of a desktop understanding of:

- The landscape/townscape, its character and features;
- The visual environment, including the location of residential and other properties and views over the landscape;
- The landscape planning context, including landscape designations, open spaces, identified views and prospects, etc.; and
- The relationship with protected structures, conservation areas, national monuments etc.

3.4.2.2.16 Air Quality

The provision of transport infrastructure has the potential to impact the air quality along the route. The assessment will consider each option, in terms of sensitive receptors, density of development and traffic, in order to identify the most suitable option from an air quality perspective.

TII guidelines on air quality define sensitive receptor locations as: residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present.

3.4.2.2.17 Noise and Vibration

The provision of transport infrastructure has the potential to impact the noise environment along the route. The assessment will consider each option, in terms of sensitive receptors and density of development, in order to identify the most suitable option from a noise and vibration perspective. TII guidelines on noise and vibration define sensitive receptor locations as residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present.

3.4.2.2.18 Land-Use Character

The provision of transport infrastructure has the potential to impact on land-use character through land-take, severance or reduction of viability, which prevents or restricts it from being used for its intended use. This criterion assesses the intended scheme along a particular route with regard to its potential impact on land-use.

3.4.2.2.19 Access to Key Trip Attractors (Education/Health/Transport/Commercial/Employment)

This assessment criterion identifies key trip attractors located along the Cross-City Link, City Centre Access Network and Inner-City Access Route which generate significant transport demand. The accessibility of each trip attractor for public transport users, pedestrians, cyclists and motorists will be examined and compared. For the purposes of this assessment, the following land-uses have been considered as key trip attractors.

- Education (secondary schools and universities);
- Commercial centres (shopping centres, town centres etc.);
- Transport hubs (bus and rail stations)
- Healthcare (hospitals);
- Leisure (sport stadiums, theatres, cinemas etc.); and
- Employment (business parks, large office developments etc.)

3.4.2.2.20 Mobility Impaired User Benefits

This assessment criterion will compare the accessibility of each option for mobility impaired users including the provision of safe crossing locations, dropped kerbs, adequate footpath widths, provision of designated disabled parking spaces and vehicular access to key trip attractors for disabled users.

3.4.2.2.21 Public Transport Network Integration

This criterion identifies the extent to which options would facilitate bus priority and facilities along the proposed core bus routes identified in the GTS. It will also assess the level of integration with wider public transport modes (e.g. regional bus services and rail services).

3.4.2.2.22 Cycle Network Integration

This criterion will identify, examine and compare options in relation to the Galway Cycle Network as identified in the GTS. Where the primary, secondary and feeder cycle network intersect with the Cross-City Link, City Centre Access Network and Inner-City Access Route, options will be assessed based on their ability to provide an adequate level of service for cyclists.

3.4.2.2.23 Road Network Integration

This criterion identifies the extent to which options will facilitate the movement of all traffic on the overall road network as envisaged in the GTS and the impact on road traffic as a result of the reallocation of road space will be considered and compared.

3.4.2.2.24 Efficient and Reliable Public Transport to and through the City Centre

The criterion will be assessed on the ability to guarantee efficiency and reliability of public transport journey time both through the city centre on the Cross-City Link and also on the approaches to the Cross-City Link along each proposed core bus route.

3.4.2.2.25 Enable Traffic to Access and move around the City Centre

Each option will be assessed based on the ability of motorised private traffic to circumnavigate the city centre and access key destinations in the city centre primarily via City Centre Access Network and the Inner-City Access Route.

3.4.2.2.26 Provision of Access to Existing Facilities

This criterion will assess the accessibility of existing facilities for essential modes including public transport, pedestrians, cyclists, motorists (where appropriate) and delivery vehicles (where appropriate).

3.4.2.2.27 Safe and Efficient Movement of Pedestrians and Cyclists on and Crossing the Route.

The criterion will examine options in terms of level of service for pedestrians and cyclists in terms of proposed infrastructure quality (e.g. footpath provision, surface, width, crossings, desire lines and potential delay, cycle level of service, safety and delay).

3.4.2.2.28 Remove Non-Essential Motorised Traffic from Core City Centre

This criterion applies to the Cross-City Link. Each sub-section will be assessed based on the anticipated level of removal of non-essential (those that do not have a destination in the core city centre) motorised traffic including private cars, delivery truck and public transport vehicles including taxis and buses from the core centre.

3.4.2.3 Option Assessment Methodology

Where feasible, three options for each route sub-section have been considered. These three options can be broadly considered in terms of the level of land take requirements and physical intervention. These categories of interventions are defined as follows:

- Option 1: Minor Interventions - Requiring no land acquisition and minimal works;
- Option 2: Moderate Interventions - Minimising land acquisition and moderate works; and

- Option 3: Major Interventions - Maximising segregated bus priority

Detail on any additional route scheme alternatives which were explored but not put forward for full assessment due to their unsuitability is provided for each route sub-section.

For each sub-section where options were available to compare, an options summary table was prepared which collates and summarises the appraisal of each option under each of the assessment criterion. For each individual assessment criterion considered, options were compared against a ‘do-nothing’ scenario based on a five-point scale, ranging from having significant advantages to having significant disadvantages compared to a ‘do nothing’ option.

For each route sub-section, where options are available to compare, an options summary table has been prepared which collates and summarises the appraisal of each option under each of the assessment criterion.

Route scheme options were compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other options. Route scheme options could also be considered neutral when no apparent advantages or disadvantages are identified across all scheme options.

For illustrative purposes, this five-point scale is colour-coded as presented in Table 3.2, with advantageous options graded towards dark green and disadvantageous options graded towards dark red.

Table 3.2: Route Scheme Options Comparative Assessment Scale

Colour	Description
	Significant advantages over the current (do nothing) scenario
	Some advantages over the current (do nothing) scenario
	Neutral compared to the current (do nothing) scenario
	Some disadvantages over the current (do nothing) scenario
	Significant disadvantages over to the current (do nothing) scenario

A qualitative appraisal of, and conclusion from, the options assessment was then provided, highlighting the key issues considered in determining preferred route sub-section scheme options (‘preferred’ and in some instances, and where applicable ‘next preferred’). It should be noted that a balanced approach was taken when assessing scheme options, whereby a lower ranking on one criterion, for example, will not necessarily mean that the option is not suitable.

The emerging preferred scheme options from each route sub-section were then put together to provide an overall scheme option for the Proposed Scheme. The outcome of this assessment process is summarised in subsequent sections of this EIAR Chapter.

3.4.3 R863 University Road to R866 St. Francis Street Junction (Route Section ‘UR’)

3.4.3.1 Extent of Route Section UR

Diagram 3.14 illustrates the extent of the route sub-section being considered. The blue dashed line represents the Cross-City Link alignment, while the pink dashed line shows adjacent streets which were considered as potentially needing additional modification to facilitate the Cross-City Link.

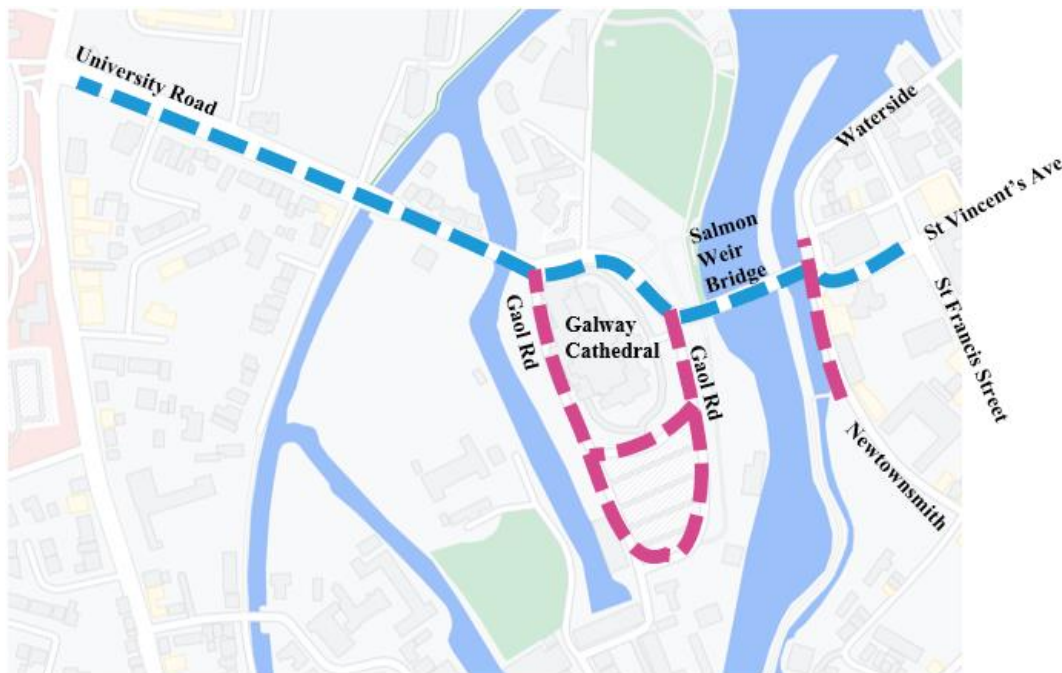


Diagram 3.14: R863 University Road to R863 St. Francis Street Junction Route Sub-section

The route sub-section and Proposed Scheme commences at the junction of R864 Newcastle Road and R863 University Road, thereby accommodating existing and future bus services feeding from R864 Newcastle Road. Longer-term, the Cross-City Link as envisaged in the GTS extends through and directly serves the University Hospital Galway Campus from the R338 Seamus Quirke Road. It is envisaged that such a route will be developed in partnership with University Hospital Galway as part of their future development planning for the campus.

3.4.3.2 Option UR1: Minor Interventions

Interventions considered under this option primarily comprise of:

- Upgrading and widening pedestrian footways and crossing points to improve pedestrian accessibility along R863 University Road;
- New public realm space to be created in front of Galway Cathedral with Gaol Road to the west of the Cathedral to be converted to 2-way general traffic movements;

- Improved bus priority achieved along R863 University Road through demand management at traffic signals at R863 University Road and Bóthar na mBan;
- Re-configured bus and car parking within existing Cathedral car park;
- Newtownsmith and Waterside to be closed off onto St. Vincent's Avenue; and
- Reconfiguration of footpaths on Salmon Weir Bridge.

This option involves achieving improved bus priority through demand management at traffic signals at R863 University Road and Bóthar Na mBan. This option requires restrictions on the volume of general traffic travelling along R863 University Road and over Salmon Weir bridge through control of 'green time' offered to traffic. To provide bus priority through these junctions, segregations for buses approaching the R863 University Road and Bothar na mBan junctions would be necessary. No dedicated bus priority measures are proposed along R863 University Road or the Salmon Weir Bridge. On the Salmon Weir Bridge, the existing narrow footpath on the southern side of the bridge will be removed and replaced with a rubbing strip, while the northern footpath will be widened to a 1.8m wide footpath, retaining an iconic view of the weir for pedestrians.

An additional proposal within this option is the conversion of Gaol Road (west) into a two-way street alongside the Cathedral to the west and south, with the Gaol Road (east) junction to R863 University Road being closed off to all public transport and vehicular traffic. This creates a natural 'gateway' whereby general traffic is diverted from R863 University Road in advance of Salmon Weir Bridge and facilitates local access to Nun's Island and the environs of Galway Cathedral.

The diversion of general traffic onto Gaol Road (west of the Cathedral) affords an opportunity to enhance the public realm in the Galway Cathedral area, including improved pedestrian facilities and a main plaza area. In tandem with these works, the existing car park to the south of Galway Cathedral is also proposed to be amended, to provide additional coach parking facilities, with a reduction in the number of general parking spaces as a result.

3.4.3.3 Option UR2: Moderate Interventions

Interventions considered under this option primarily comprise of:

- Upgrading and widening pedestrian footways and crossing points to improve pedestrian accessibility along R863 University Road;
- Improved bus priority achieved along R863 University Road through removal of vehicular traffic demand;
- New public realm space to be created in front of Galway Cathedral with Gaol Road to the west of the Cathedral to be converted to 2-way general traffic movements;
- Re-configured bus and car parking within existing Cathedral car park;
- Salmon Weir Bridge to be restricted to a Bus Gate, closed to general traffic and redesignated for bus use only;
- Newtownsmith and Waterside to be closed off onto St. Vincent's Avenue; and

- Bus only lane inbound provided on St. Vincent's Avenue.

This option examines closing the Salmon Weir Bridge to general vehicular traffic, and re-designating to allow for bus-use only. No dedicated bus priority measures are proposed along R863 University Road. Bus priority would be achieved through the removal of through traffic from R863 University Road and Salmon Weir Bridge.

In conjunction with the closure of the bridge, this option would include widening footways along the route and the rationalisation of on-street parking. Traffic calming features are proposed along the route entailing the provision of raised tables and signalised pedestrian crossings on R863 University Road. These works would likely impact upon the existing on-street parking provision with a potential reduction in parking spaces.

Proposals within this option around Gaol Road (West) and Gaol Road (east) create a natural 'gateway', whereby general traffic is diverted from R863 University Road in advance of Salmon Weir Bridge and facilitates local access to Nun's Island and the environs of Galway Cathedral. The diversion of general traffic onto Gaol Road (west of the Cathedral) affords an opportunity to enhance the public realm in the Galway Cathedral area, including improved pedestrian facilities and a main plaza area. Additional coach parking facilities will be provided in the carpark to the south of Galway Cathedral, which will reduce the number of general parking spaces as a result

In addition to these proposals, Newtownsmith is to be converted to a cul-de-sac, with only to a one-way northbound egress permitted at specified times, while it is also proposed to close the junction of Waterside/St. Vincent's Avenue (adjacent to Galway Courthouse) to control the flow of traffic onto the Cross-City Link.

3.4.3.4 Option UR3: Major Interventions

Interventions considered under this option primarily comprise of:

- Road widening along R863 University Road to provide inbound and outbound bus lanes. Property frontage acquisition;
- Segregated cycle tracks along R863 University Road;
- No restrictions on Salmon Weir Bridge;
- No changes to circulatory around Galway Cathedral;
- No changes to Newtownsmith and Waterside; and
- Significant accommodation works to retain access to existing properties.

This option examines the potential to achieve bus priority along R863 University Road without the closure of the Salmon Weir Bridge to general traffic. This option therefore would involve the provision of discontinuous bus lanes along R863 University Road where possible to do so on the approach to the existing bridge.

These bus lanes would be provided in both directions, with an inbound bus lane provided from the Eglinton Canal Bridge to the Salmon Weir Bridge, and the outbound bus lane provided from the Eglinton Canal Bridge to R864 Newcastle Road. On approach to the Salmon Weir Bridge, the section of R863 University Road to the north of the Cathedral would be for buses only, with vehicular traffic to be routed along Gaol Road and around Galway Cathedral before crossing the bridge. Salmon Weir Bridge would remain open to all traffic; however public transport priority would be strengthened on the approach from R863 University Road.

This option would result in on-street parking being removed along the entirety of R863 University Road. Segregated cycle tracks in both directions along R863 University Road would also be required. Consequently, footpath widths would need to be altered in places to facilitate implementation of bus lanes. Land acquisition along the majority of R863 University Road would be necessary for this option.

3.4.3.5 Section UR Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option of providing inbound and outbound bus lanes along R863 University Road - This option was examined and sifted out as this option, including the construction of cycle tracks, would require a cross-section of a minimum of 20m. This would require the replacement of two bridges over the Eglinton Canal, the acquisition of frontage from 24 properties including removal of driveways and the demolition of part of the NUIG boundary wall. It was considered that this option would not provide any significant benefits over options UR2 and UR3 while requiring significantly more land acquisition, infrastructure provision and disruption during construction;
- An option of widening or replacing the Salmon Weir Bridge to facilitate bus lanes. This could permit buses and general traffic to utilise this river crossing, however the pinch point would remain along St. Vincent's Avenue where a 12m cross-section only is available. The acquisition and demolition of Galway Courthouse and / or part of the Franciscan Abbey buildings was not considered to be feasible. As such, widening the Salmon Weir bridge would not provide sufficient bus priority relative to the infrastructure required.

3.4.3.6 Route Section UR Multi-Criteria Assessment

A summary of the MCA undertaken is presented in Table 3.3.

Table 3.3: Route Section UR MCA Summary

Assessment Criteria/sub-criteria		Option		
Criterion	Assessment Sub-Criterion	UR1	UR2	UR3
Economy	1.a. Capital Cost			
	1.b. Transport Reliability and Quality (PT Journey Time)			
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)			
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)			
Safety	2.a. Pedestrian User Safety			
	2.b. Cyclist User Safety			
	2.c. Public Transport User Safety			
	2.d. Other Road User Safety			
Physical Activity	3.a. Promotion of Active Travel			
Environment	Archaeological, Architectural and Cultural Heritage			
	Flora & Fauna			
	Soils and Geology			
	Hydrology			
	Landscape and Visual			
	Air Quality			
	Noise & Vibration			
	Land Use Character			
Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors			
	5.b. Mobility Impaired User Benefits			
Integration	6.a. Public Transport Network Integration			
	6.b. Cycle Network Integration			
	6.c. Road Network Integration			
GTS Policies	7.a. Efficient and Reliable public transport (to and through the city centre)			
	7.b. Enable Traffic to access and move around the city centre.			
	7.c. Provision of Access to existing facilities			
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the routes.			
	7.e. Remove non-essential motorised traffic from core city centre			

The MCA concluded that Option UR2 provides the most benefits relative to achieving the scheme objectives, while also recognising that there is the potential for negative impacts, primarily related to general traffic redistribution.

The closure of Salmon Weir Bridge to private car traffic is clearly the most beneficial in terms of the performance of the Cross-City Link; however, the wider area impacts on the traffic network are also the most wide reaching under this option due to the re-routing of traffic onto alternative bridge crossings.

Notwithstanding the negatives with regard to private traffic, the removal of through traffic along this section will provide significantly improved pedestrian environment, an improved and safety cycle environment and provide bus priority along the length.

It was therefore recommended that option UR2 becomes the preferred route scheme option along R863 University Road and onwards as far as R866 St. Francis Street Junction.

3.4.4 R866 St. Francis Street and R866 Eglinton Street (Route Section 'FS')

3.4.4.1 Extent of Route Section FS

Diagram 3.15 illustrates the extent of the route sub-section being considered. The blue dashed line represents the Cross-City Link alignment.

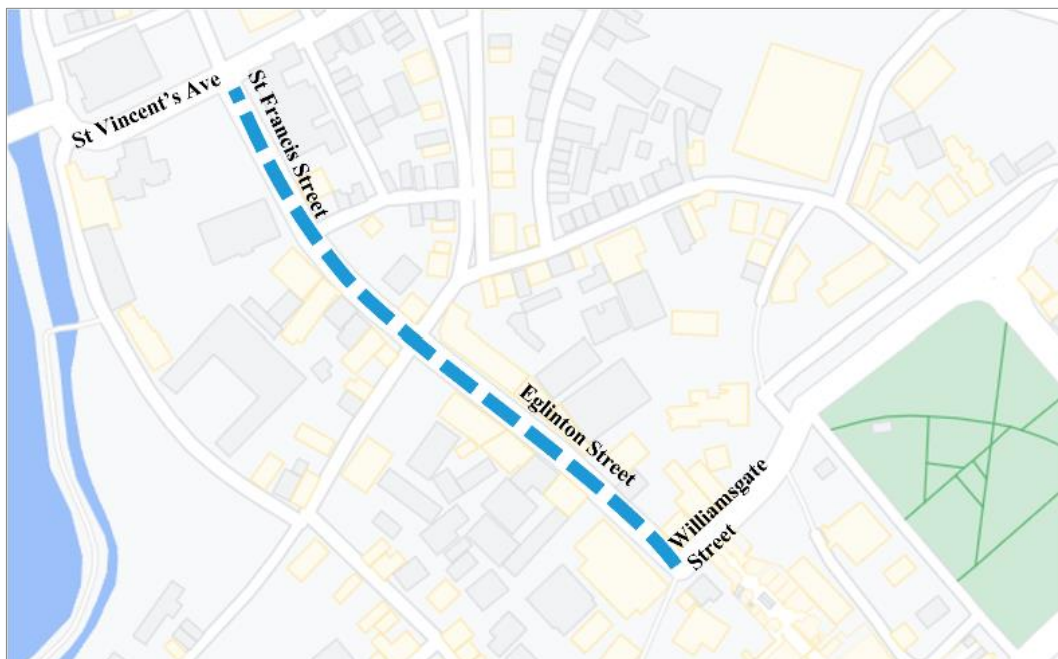


Diagram 3.15: R866 St. Francis Street and R866 Eglinton Street Route Sub-section

3.4.4.2 Option FS1: Minor Interventions

Interventions considered under this option primarily comprise of:

- R866 St. Francis Street reconfigured to being bus lane only inbound;

- Eglinton Street reconfigured to being bus lane only inbound;
- Footpath widening on R866 Eglinton Street;
- The provision of a signal-controlled pedestrian crossing on R866 St. Francis Street; and
- Signalisation of the junction of R866 St. Francis Street / R866 Eglinton Street / Mary Street / Daly Place.

This option involves converting the inbound lane of both R866 St. Francis Street and R866 Eglinton Street into a bus-only lane while maintaining the outbound lanes as general traffic lanes. This option also proposes reversing the one-way direction of traffic on Daly's Place from Woodquay to R866 Eglinton Street to retain access to R866 St. Francis Street from the Headford Road direction. All traffic from Mary Street, will be required to turn left onto R866 St. Francis Street unless permitted to enter a bus lane, while all traffic from Daly's Place will be required to turn right unless permitted to enter a bus lane.

Local access to R866 Eglinton Street will remain possible via Eyre Street and R866 Eyre Square, however R866 Eglinton Street outbound will effectively be removed as a through route, thereby providing bus priority over general traffic. Footpaths along R866 Eglinton St. and parts of R866 St. Francis Street in the vicinity of the new signalised junction will be replaced and widened.

Due to the constraints along R866 St. Francis Street and R866 Eglinton Street, road widening for the construction of bus segregation or cycle segregation is not considered a feasible option. As such, no alternate infrastructure options have been assessed for this section.

3.4.4.3 Route Section FS Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- Option of converting both inbound and outbound lanes along R866 St. Francis Street and R866 Eglinton Street to bus lanes. This option was examined and sifted out as this would remove opportunities to access properties and car parks along this street during the hours of operation of the bus lane. Existing premises requiring vehicular access include the Mercy Primary School, The Franciscan Abbey grounds, Galway Post Office and the car park and delivery access to the rear of the Imperial Hotel.

3.4.4.4 Route Section FS Options Assessment

As only one feasible option was considered as part of the route section scheme options assessment, no MCA was necessary for this part of the Cross-City Link.

It was therefore recommended that option FS1 becomes the preferred route scheme option along R866 St. Francis Street and R866 Eglinton Street.

3.4.5 R866/R336 Eyre Square to R339 Forster Street (Route Section ‘ES’)

3.4.5.1 Extent of Route Section ES

Diagram 3.16 illustrates the extent of the route sub-section being considered. The blue dashed line represents the Cross-City Link alignment, while the pink dashed line shows adjacent streets which were considered as potentially needing additional modification to facilitate the Cross-City Link.

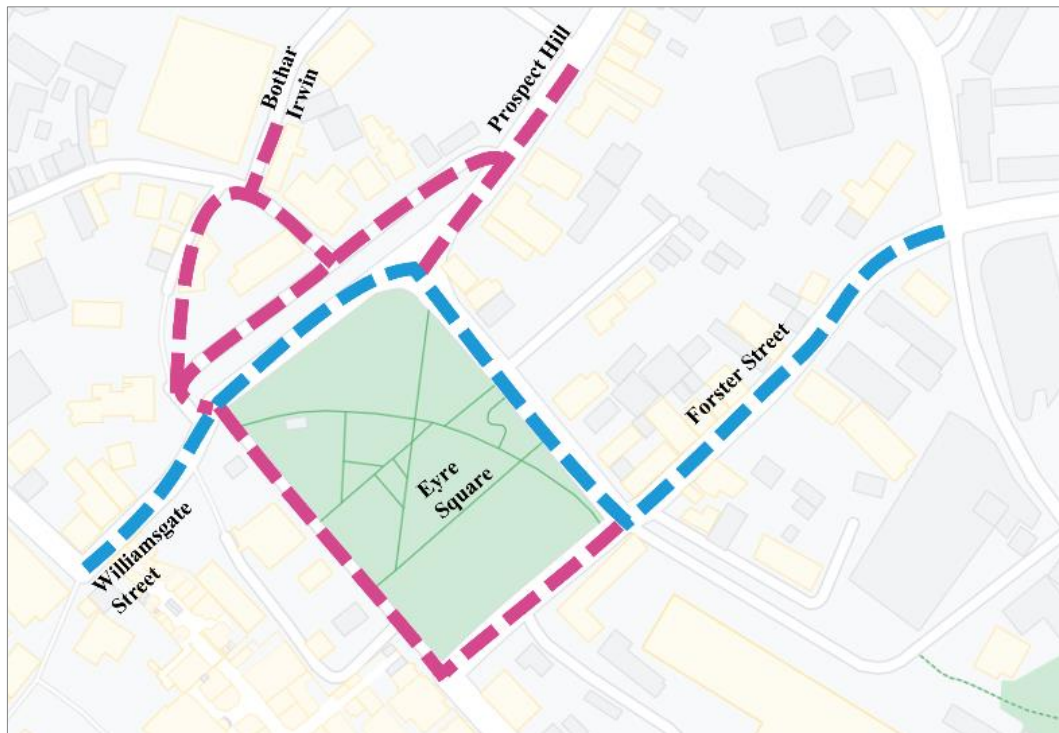


Diagram 3.16: R866/R336 Eyre Square to R339 Forster Street Route Sub-section

3.4.5.2 Option ES1: Minor Interventions

Interventions considered under this option primarily comprise of:

- R866/R336 Eyre Square north and east becoming two-way bus only;
- R339 Forster Street being reconfigured to two-way bus only;
- Access from Prospect Hill to R866/R336 Eyre Square removed with access only permitted onto Shop Street via bollard control at designated times;
- Vehicular access permitted from Eyre Street to R866 Eyre Square North, with traffic required to exit R866 Eyre Square via Williamsgate Street/Eglington Street;
- Vehicular access permitted from R336 Eyre Square south to St. Patricks Avenue and Frenchville Lane; and
- Removal of vehicular access to the northern section of Eyre Square and the creation of an expanded public realm space.

This option involves converting R339 Forster Street and R336 Eyre Square East into two-way public transport-only streets, as well as Williamsgate Street (in the eastbound lane only). Vehicular access would be permitted from Eyre Street to R866 Eyre Square North for private vehicles, however in the proposed arrangement this vehicular traffic would be required to exit R866 Eyre Square via Williamsgate Street/Eglinton Street (i.e., no left-turn would be permitted from Eyre Street onto R866 Eyre Square North). To route on to Prospect Hill, right-turning movements would be permitted to R866 Eyre Square North only).

Due to physical constraints at Garvey's Corner, two buses could not pass in either direction simultaneously, therefore traffic signals would be required to operate on a shuttle basis to allow buses from each direction to run one at a time.

The restricting of traffic to buses and authorised vehicles only includes the removal of traffic from the northern section of R866 Eyre Square. This provides the opportunity to expand the public realm space at the north end of Eyre Square. Local access to St. Patricks Avenue and Frenchville Lane would be maintained, while access to and from R866 Eyre Square from Eyre Street and Rosemary Avenue would be controlled via bollards.

Along R339 Forster Street, footpath widening is proposed along with the removal of on-street parking, relocated the loading zone and increased public realm space.

Due to the constraints along R866/R336 Eyre Square and R339 Forster Street, road widening for the construction of bus segregation or cycle segregation is not considered a feasible option. As such, no alternate infrastructure options have been assessed for this section.

3.4.5.3 Route Section ES Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option where R339 Forster Street, R866/R336 Eyre Square, Prospect Hill and Bothar Ui hEithir remain one-way and one lane of dedicated bus lane is provided along its entirety. This option was examined and sifted out as this would introduce unnecessary traffic onto the Cross-City Link. Traffic with no origin or destination on the Cross-City Link could route along R339 Forster Street and R336 Eyre Square East to cross the city centre, resulting in delay to public transport services;
- An option of R339 Forster Street becoming a two-way public transport only street. R866 Eglinton Street southbound and Williamsgate Street eastbound becoming public transport only. R866 Eyre Square North and R336 Eyre Square East would be closed and Eyre Square West reopened to vehicles. This option was examined and sifted out as although it would provide continuous public realm space connectivity between Eyre Square North, East and Kennedy Park, new bus stop facilities would be required along Eyre Square West and South and access for taxis and deliveries would also be required. This was considered to remove any benefits of opening Eyre Square West to traffic.

3.4.5.4 Route Section ES MCA

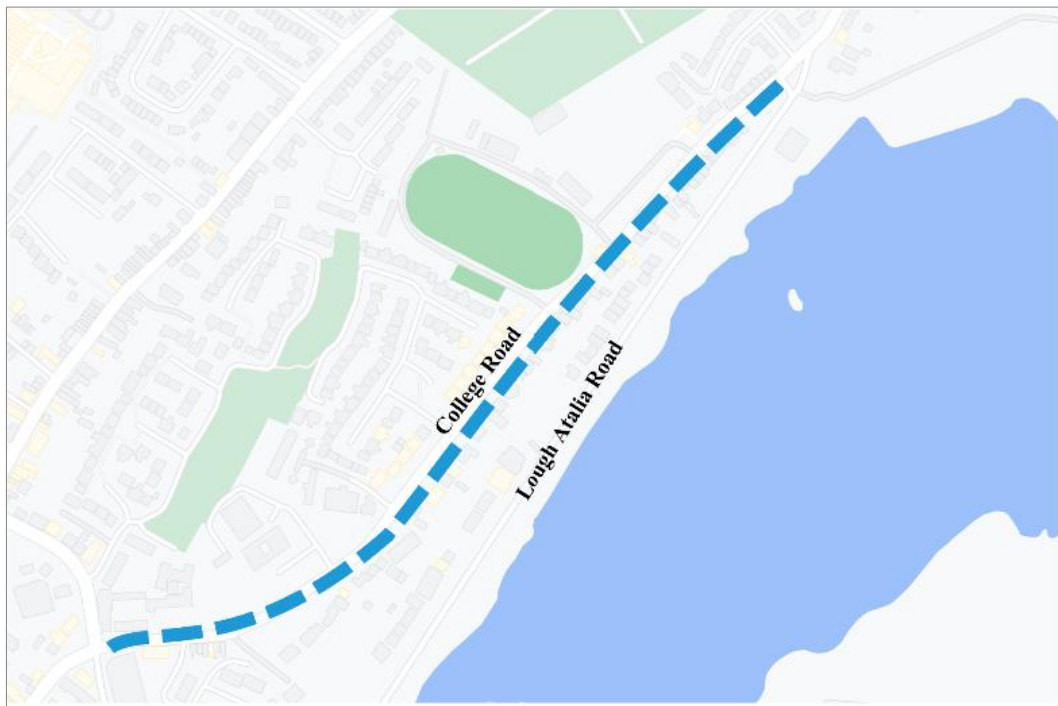
As only one feasible option was considered as part of the route section scheme options assessment, no MCA was necessary for this part of the Cross-City Link.

It was therefore recommended that option ES1 becomes the preferred route scheme option traversing R866/R336 Eyre Square and along R339 Forster Street.

3.4.6 R339 College Road from R339 Forster Street to Lough Atalia Road (Route Section ‘CR’)

3.4.6.1 Extent of Route Section CR

Diagram 3.17 illustrates the extent of the route sub-section being considered. The blue dashed line represents the Cross-City Link alignment.



**Diagram 3.17: R339 College Road (R339 Forster Street to Lough Atalia Road)
Route Sub-section**

3.4.6.2 Option CR1: Minor Interventions

Interventions considered under this option primarily comprise of:

- A ‘Bus Gate’ provided on R339 College Road (between City Hall and R339 Forster Street);
- Upgrading of pedestrian footways and crossing points to improve pedestrian accessibility;

- Amendments to the junction of R339 College Road and Lough Atalia Road to permit vehicles to turn right from R339 College Road to Lough Atalia Road; and
- Maintaining current on street parking and access arrangements.

This option includes the provision of a bus gate on R339 College Road to restrict through-movement for vehicular traffic, whilst facilitating the movement of public transport vehicles directly to and from R339 Forster Street. This bus gate would take the form of a short section of bus lane so that only pedestrians, cyclists, buses and vehicles are permitted to pass through by means of prioritised alternate movements. Local access to all properties would be maintained via one end of R339 College Road or the other, depending on a property's location relative to the bus gate. Bus priority and a traffic-calmed street environment supporting cycle priority would be established through the removal of all through traffic on R339 College Road.

This option would also involve upgrading pedestrian footways and crossing points to improve pedestrian amenity along the route. This would include widening footways to at least 1.8m where possible. Pedestrian crossings would be installed in the vicinity of the Connacht Rugby sportsgrounds and in the vicinity of Yeats College (close to Galway City Hall).

As the proposal contained in Option CR1 meets the requirements of both a minor and moderate intervention, without the need for land acquisition, no additional moderate interventions were considered.

3.4.6.3 Option CR2: Major Interventions

Interventions considered under this option primarily comprise of:

- Road widening along R339 College Road to provide inbound and outbound bus lanes;
- Provision of inbound and outbound segregated cycle tracks;
- Property frontage acquisition and demolition of 2 no. residential properties; and
- The removal of all on-street parking.

This option achieves the provision of dedicated bus lanes on R339 College Road. The bus lanes would be continuous along both sides of the entire length of the road. As no traffic removal would be achieved in this option, segregated cycle tracks would also be required.

Pedestrian crossings would be installed in the vicinity of bus stops, and at other key pedestrian desire lines. This option would require the removal of all on-street car parking along R339 College Road.

Significant land acquisition would be necessary to achieve the minimum (20m) cross section necessary from properties along the road, including the Magdalene Convent, the Sportsground, frontage from a minimum of 16 residential properties and the acquisition and demolition of a minimum of 2 no. residential properties.

3.4.6.4 Route Section CR Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option of creating a one-way system around Lough Atalia Road and R339 College Road with a bus lane on each road. This option was examined and sifted out. This option would result in either bus services utilising a route not on the Cross-City Link meaning inbound bus services would not serve key destinations including City Hall, Yeats College and the Sportsground or, alternatively, city bus services would continue to utilise College Road and no benefits would be gained by the provision of bus priority on Lough Atalia Road;
- Providing back-to-back inbound and outbound bus lanes on R339 College Road with the direction of the bus lane changing at approximately at City Hall. This option was examined and sifted out as queueing of traffic on R339 College Road has been regularly observed to extend beyond this point in both directions. This option would therefore not provide the bus priority necessary for the Cross-City Link.

3.4.6.5 Route Section CR Options Assessment

A summary of the MCA undertaken is presented in Table 3.4.

Table 3.4: Route Section CR MCA Summary

Assessment Criteria/sub-criteria		Options	
Criterion	Assessment Sub-Criterion	CR1	CR2
Economy	1.a. Capital Cost		
	1.b. Transport Reliability and Quality (PT Journey Time)		
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)		
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)		
Safety	2.a. Pedestrian User Safety		
	2.b. Cyclist User Safety		
	2.c. Public Transport User Safety		
	2.d. Other Road User Safety		
Physical Activity	3.a. Promotion of Active Travel		
Environment	Archaeological, Architectural and Cultural Heritage		
	Flora & Fauna		
	Soils and Geology		
	Hydrology		
	Landscape and Visual		
	Air Quality		

Assessment Criteria/sub-criteria		Options	
Criterion	Assessment Sub-Criterion	CR1	CR2
	Noise & Vibration		
	Land Use Character		
Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors		
	5.b. Mobility Impaired User Benefits		
Integration	6.a. Public Transport Network Integration		
	6.b. Cycle Network Integration		
	6.c. Road Network Integration		
GTS Policies	7.a. Efficient and Reliable public transport (to and through the city centre)		
	7.b. Enable Traffic to access and move around the city centre.		
	7.c. Provision of Access to existing facilities		
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the routes.		
	7.e. Remove non-essential motorised traffic from core city centre		

The MCA concluded that both options could feasibly meet the objectives of the Cross-City Link, however Option CR1 provides a less intrusive option for local residents as it doesn't require widening of the existing carriageway, while positively removing through traffic, creating a better environment for pedestrians and cyclists.

It was therefore recommended that option CR1 becomes the preferred route scheme option along R339 College Road.

3.4.7 R339 College Road from Lough Atalia Road to Moneenageisha (Route Section 'CRM')

3.4.7.1 Extent of Route Sub-Section CRM

Diagram 3.18 illustrates the extent of the route sub-section being considered. The blue dashed line represents the Cross-City Link alignment.

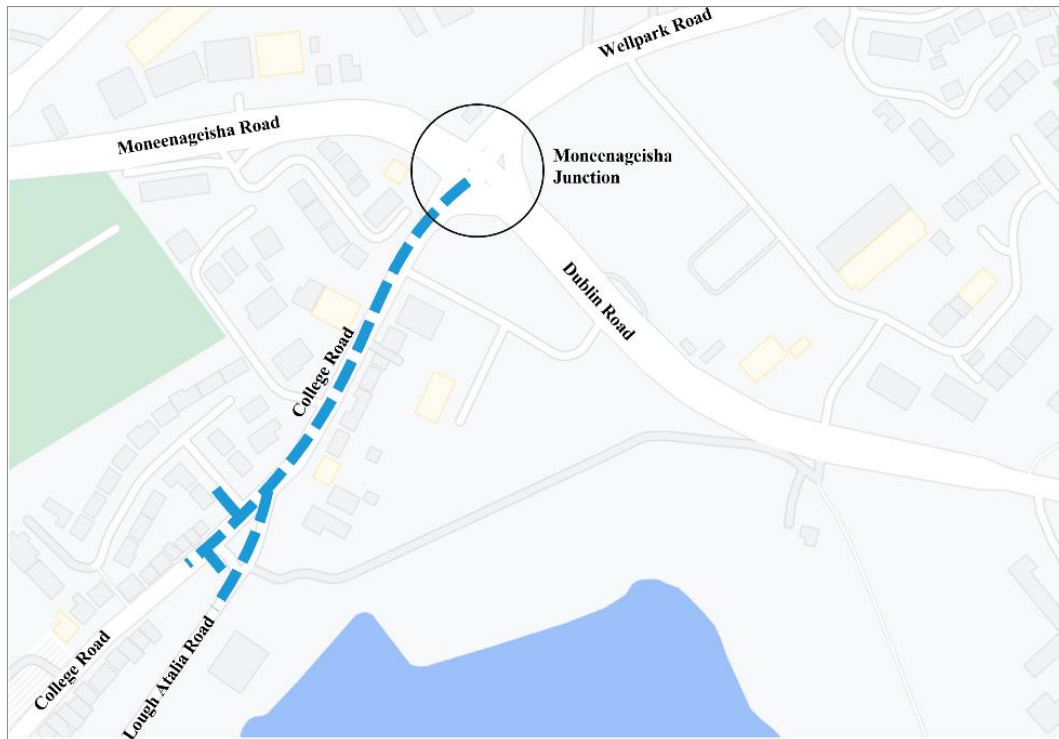


Diagram 3.18: R339 College Road (Lough Atalia Road to Moneenageisha) Route Sub-section

3.4.7.1.1 Option CRM1: Minor Interventions

Interventions considered under this option primarily comprise of:

- Maintaining R339 College Road, between Lough Atalia Road and Moneenageisha Road at its current width;
- One outbound lane to be converted to a bus lane;
- Localised flaring being provided at Loyola Park to allow for a right turning lane; and
- Minor amendments to Moneenageisha Junction.

This option proposes maintaining the existing road width, converting one of the existing outbound general traffic lanes to a bus only lane. This option would require an upgrading of the junction with Lough Atalia Road and R339 College Road to accommodate changes to traffic movements and bus priority.

Outbound bus priority on R339 College Road approaching Moneenageisha junction would be achieved through the provision of this bus lane. All other traffic would be required to use the remaining single lane approach to Moneenageisha junction. Some minor amendments to Moneenageisha junction would be required to provide bus priority signals from the bus lane on R339 College Road through the junction. No cycle facilities are proposed as part of this option.

3.4.7.2 Option CRM2: Moderate Interventions

Interventions considered under this option primarily comprise of:

- R339 College Road, between Lough Atalia Road and Moneenageisha Road being widened to provide an additional inbound raised cycle track and an outbound bus lane;
- Major amendments to Moneenageisha and Lough Atalia Junctions; and
- The provision of a ‘bus gate’ to allow outbound buses to turn right on to the R338 Dublin Road bus lane or to continue straight to Wellpark Road.

The provision of a new outbound bus lane on R339 College Road between Lough Atalia Road and Moneenageisha under this option requires road widening to the northern aspect of R339 College Road. At the junction with Moneenageisha, a bus gate is proposed to allow outbound buses to turn right on to the R338 Dublin Road bus lane or to continue straight to Wellpark Road.

The existing two outbound traffic lanes are retained in addition to the new bus lane, while inbound a single traffic lane is proposed. The inbound traffic lane would then flare locally to provide right-turning facilities to Loyola Park and R339 College Road. This option also includes the provision of an inbound raised adjacent cycle lane from Moneenageisha junction to R339 College Road/Lough Atalia Road junction

This option would require a degree of land acquisition on R339 College Road in order to provide the necessary infrastructure for the various transport modes using the route.

3.4.7.3 Option CRM3: Major Interventions

Interventions considered under this option primarily comprise of:

- Significant widening along R339 College Road between Lough Atalia Road and Moneenageisha Road to provide inbound and outbound bus lanes;
- The provision of an inbound and outbound segregated cycle track;
- Associated major amendments to the Moneenageisha and Lough Atalia Junctions; and
- Property frontage land acquisition.

This provides dedicated inbound and outbound bus lanes and cycle tracks on R339 College Road between Lough Atalia Road and Moneenageisha requiring significant road widening. The two existing outbound and one existing inbound traffic lanes are proposed to be retained. At the junction at Moneenageisha, a bus gate is provided to allow outbound buses to proceed through the junction to the R338 Dublin Road/R339 Wellpark Road.

Inbound, a single traffic lane is retained, which widens locally to provide a right-turning lane to the Loyola Park and to R339 College Road.

3.4.7.4 Route Section CRM Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option of providing signal-controlled bus priority between the R339 College Road Lough Atalia Road junction and the Moneenageisha Junction. This option was examined and sifted out. It is not considered feasible to gate outbound traffic on Lough Atalia sufficiently in one lane to keep the downstream lane clear for bus priority as this storage capacity is required on the City Centre Access Network due to redistribution of traffic arising from the Cross-City Link. For this option to work, it would likely reduce the anti-clockwise capacity of the City-Centre Access Network in half, while not guaranteeing bus priority;
- An option of providing the cross-section proposed in Option CRM2 with road widening to predominately take place on the eastern side of the road. This option was examined and sifted out due to the alignment of R339 College Road approaching the Moenneageisha junction and also due to the relative proximity of 11 residential properties to the road edge. Widening in this direction would result in the removal of entire private frontages to properties resulting in doors opening directly onto footpaths and would not provide sufficient width to negate the requirement for land acquisition from the western side of the road. For these reasons, this option was not considered further.

3.4.7.5 Route Section CRM MCA

A summary of the MCA undertaken is presented in Table 3.5.

Table 3.5: Route Section CRM MCA Summary

Assessment Criteria/sub-criteria		Option		
Criterion	Assessment Sub-Criterion	CRM 1	CRM 2	CRM 3
Economy	1.a. Capital Cost			
	1.b. Transport Reliability and Quality (PT Journey Time)			
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)			
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)			
Safety	2.a. Pedestrian User Safety			
	2.b. Cyclist User Safety			
	2.c. Public Transport User Safety			
	2.d. Other Road User Safety			
Physical Activity	3.a. Promotion of Active Travel			
Environment	Archaeological, Architectural and Cultural Heritage			

Assessment Criteria/sub-criteria		Option		
Criterion	Assessment Sub-Criterion	CRM 1	CRM 2	CRM 3
	Flora & Fauna			
	Soils and Geology			
	Hydrology			
	Landscape and Visual			
	Air Quality			
	Noise & Vibration			
	Land Use Character			
Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors			
	5.b. Mobility Impaired User Benefits			
Integration	6.a. Public Transport Network Integration			
	6.b. Cycle Network Integration			
	6.c. Road Network Integration			
GTS Policies	7.a. Efficient and Reliable public transport (to and through the city centre)			
	7.b. Enable Traffic to access and move around the city centre.			
	7.c. Provision of Access to existing facilities			
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the routes.			
	7.e. Remove non-essential motorised traffic from core city centre			

The MCA identifies that options CRM2 and CRM3 could feasibly meet the objectives of the Cross-City Link, while option CRM1 provides little benefit over the existing scenario.

It should be noted that this section of the Cross-City Link also forms part of the City Centre Access Network and as such, is also required to meet the needs of this strategic route in terms of catering for general traffic movements, particularly orbital movements around the City Centre.

While both options CRM2 and CRM3 demonstrate benefits, regarding the extent to which options meet the objectives of the scheme, the benefits presented by CRM3 are higher than those demonstrated by CRM2. This is due to CRM3 providing segregated bus priority and cycle facilities in both directions. However, this is offset by the potential negative environmental impacts associated with CRM3 resulting from the 5m of additional road widening that would be required. This would also likely require land acquisition from an additional 12 no. properties.

It was therefore recommended that option CRM2 becomes the preferred route scheme option along R339 College Road, balancing the extent to which scheme objectives are met with the potential to mitigate any impacts arising.

3.4.8 R338 Dublin Road (Route Section ‘DR’)

3.4.8.1 Extent of Route Sub-Section DR

Diagram 3.19 illustrates the extent of the sub-section being considered. The blue dashed line represents the Cross-City Link alignment.

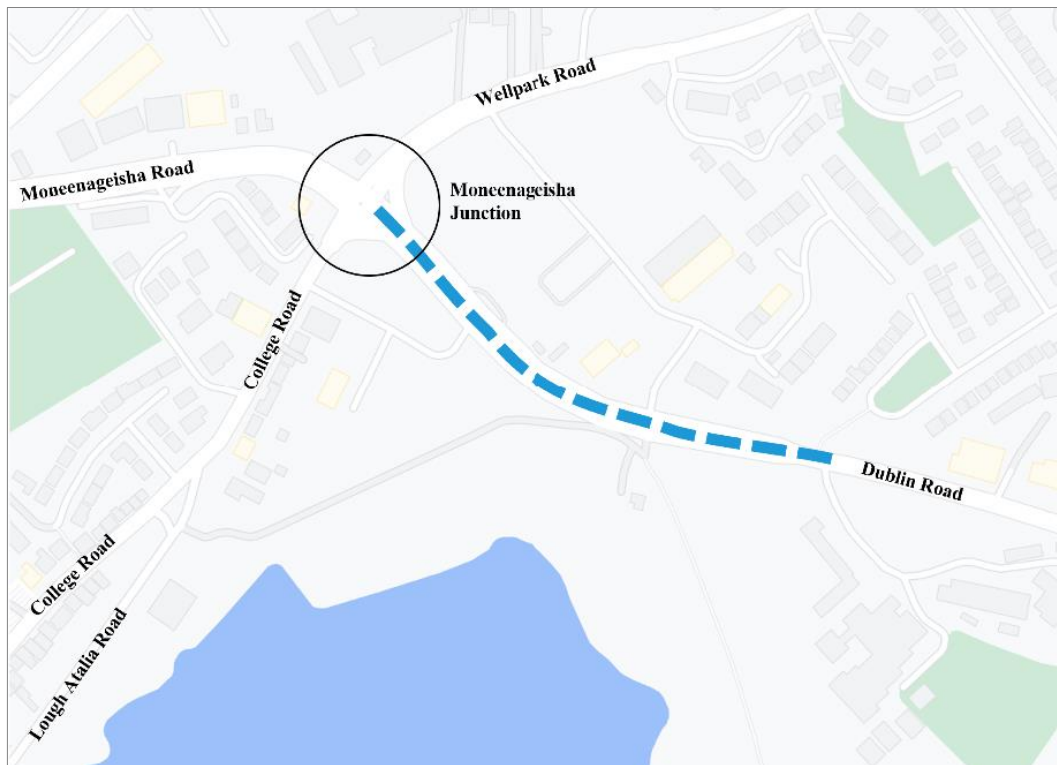


Diagram 3.19: R338 Dublin Road Route Sub-section

The extent of the route along the R338 Dublin Road to be incorporated within the Proposed Scheme is intended to ensure that in the outbound direction, there is continuous bus priority provided between the Moneenageisha Junction connecting to where the existing bus lane operates. On the inbound approach to the Moneenageisha Junction, it is considered beneficial to provide bus priority to bypass queuing general traffic during peak commuter periods. Further, more comprehensive public transport and active travel infrastructure along the R338 Dublin Road is envisaged as part of the GTS and will be delivered under a separate project by GCC.

3.4.8.2 Option DR1: Minor Interventions

Interventions considered under this option primarily comprise of:

- Converting one inbound traffic lane to a bus lane;
- Maintaining the existing road width; and
- No additional segregated cycle facilities being provided.

This option maintains the existing road width along R338 Dublin Road. On the inbound approach, from the access junction to Wellpark Retail Park to the Moneenageisha junction, one existing traffic lane will be converted to a bus only lane. The existing outbound configuration of an outbound bus lane and outbound general traffic lane will be maintained.

At the Moneenageisha junction, a bus gate with bus priority signals will be provided for the inbound bus lane. Straight ahead, and left turn traffic will complete their manoeuvres from a single lane.

No segregated cycle facilities are proposed as part of this option.

3.4.8.3 Option DR2: Moderate Interventions

Interventions considered under this option primarily comprise of:

- R338 Dublin Road is widened between ‘Brothers of Charity’ and Moneenageisha junction to provide a bus lane in both directions;
- The existing number of general traffic lanes is maintained in both directions;
- A bus gate is provided at the Moneenageisha junction on approach from R338 Dublin Road to permit left turning for buses in advance of general traffic; and
- A segregated cycle track is provided in both directions.

In this option, a bus lane is provided in both the inbound and outbound directions. In the inbound direction, the existing two general traffic lanes are proposed to be retained as a straight-ahead lane and a right turn lane. The inbound bus lane will have a bus priority signal at the Moneenageisha junction.

In the outbound direction, the existing configuration is proposed to be maintained, with two vehicular lanes from Moneenageisha Road merging into a single outbound traffic lane. The outbound bus lane is proposed to be extended back to begin at the Moneenageisha junction.

Segregated cycle tracks are proposed on both the inbound and outbound directions. At the Moneenageisha junction, the inbound cycle track, located to the left of the bus lane and the left turn traffic lane, will enter onto a shared space and a ‘toucan crossing’ for straight ahead cyclists to continue onto Moneenageisha Road.

As the proposals contained in Option DR2 meets the requirements of both a moderate and major intervention, as it provides fully segregated bus lanes, cycle tracks and pedestrian footpaths, while maintaining the existing number of general traffic lanes, no additional major interventions were considered.

3.4.8.4 Route Section DR Alternative Options Considered

No substantive alternative options were assessed for this route sub-section of the Proposed Scheme.

3.4.8.5 Route Section DR MCA

A summary of the MCA undertaken is presented in Table 3.6.

Table 3.6: Route Section DR MCA Summary

Assessment Criteria/sub-criteria		Options	
Criterion	Assessment Sub-Criterion	DR1	DR2
Economy	1.a. Capital Cost		
	1.b. Transport Reliability and Quality (PT Journey Time)		
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)		
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)		
Safety	2.a. Pedestrian User Safety		
	2.b. Cyclist User Safety		
	2.c. Public Transport User Safety		
	2.d. Other Road User Safety		
Physical Activity	3.a. Promotion of Active Travel		
Environment	Archaeological, Architectural and Cultural Heritage		
	Flora & Fauna		
	Soils and Geology		
	Hydrology		
	Landscape and Visual		
	Air Quality		
	Noise & Vibration		

	Land Use Character		
Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors		
	5.b. Mobility Impaired User Benefits		
Integration	6.a. Public Transport Network Integration		
	6.b. Cycle Network Integration		
	6.c. Road Network Integration		
GTS Policies	7.a. Efficient and Reliable public transport (to and through the city centre)		
	7.b Enable Traffic to access and move around the city centre.		
	7.c. Provision of Access to existing facilities		
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the routes.		
	7.e. Remove non-essential motorised traffic from core city centre		

The MCA identifies that option DR2 clearly provides higher benefits than option DR1 and better meets the objectives required of the Proposed Scheme. DR1 has less environmental impact than DR2 as a result of not widening outside of the road curtilage. The extent of any such potential impacts were considered to be addressable through the EIA process and therefore not a reason to eliminate DR2 from the assessment process.

It was therefore recommended that option DR1 becomes the preferred route scheme option along R338 Dublin Road, balancing the extent to which scheme objectives are met with the potential to mitigate any impacts arising.

3.4.9 Fairgreen Road (Route Section ‘FR’)

3.4.9.1 Extent of Route Sub-Section FR

Diagram 3.20 illustrates the extent of the Inner-City Access Route sub-section being considered where modifications are required to accommodate the delivery of the Cross-City Link.

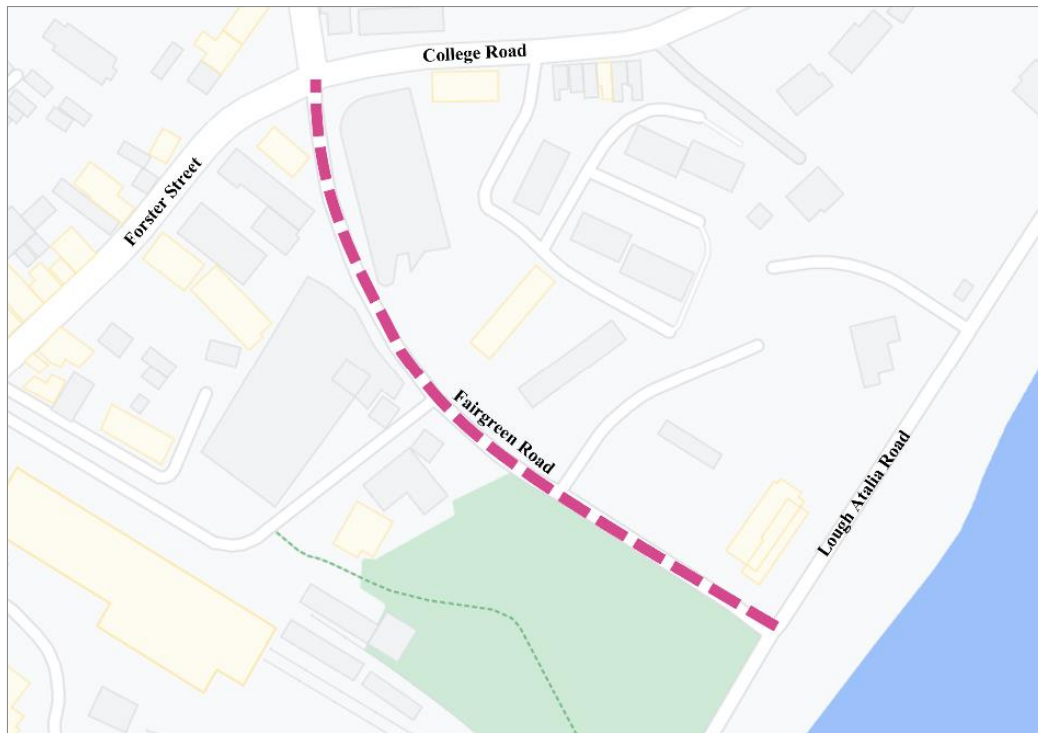


Diagram 3.20: Fairgreen Road Inner City Access Route Sub-section

3.4.9.2 Option FR1: Minor Interventions

Interventions considered under this option primarily comprise of:

- Fairgreen Road being retained as one lane in both directions with a central turning lane at the northern and southern ends of the route; and
- The provision of enhanced pedestrian facilities.

Fairgreen Road forms part of the Inner-City Access Route. The GTS does not propose that any of the revised bus network route utilise this street, however the access to Galway bus station and exit from Galway Coach station are both located on Fairgreen Road.

At the end of Fairgreen Road, at its junction with R339 Forster St, the Inner-City Access Route intersects with the Cross-City Link. With the introduction of the Cross-City Link, vehicular movement is expected to be required along the Inner-City Access Route. It is therefore proposed to maintain the existing two-lane vehicle configuration of Fairgreen Road.

In relation to traffic capacity, there would be minimal impact at the R339 Forster Street junction, as turning movements onto the Cross-City Link (either at R339 Forster Street or R339 College Road) would be discouraged at specific times (for R339 Forster Street) or restricted to local access (on R339 College Road).

As Fairgreen Road forms part of the Inner-City Access Route, this route is proposed to be maintained as a two-way general traffic route in all Options considered. As such, no alternate infrastructure options have been assessed for this section.

3.4.9.3 Route Section FR Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option of converting Fairgreen Road, R339 College Road and Lough Atalia Road into a one-way circulatory as described in Section 3.4.5.4. This option was examined and sifted out as Fairgreen Road forms part of the Inner-City Access Route and it was not considered feasible to alter this street into a one-way route given its importance and function going forward providing an orbital route around the city centre for general traffic and to facilitate access routes to city centre car parks.

3.4.9.4 Route Section FR MCA

As only one feasible option was considered as part of this options assessment, no MCA was undertaken for this route section of the Proposed Scheme.

It was therefore recommended that option FR1 becomes the preferred route scheme option along Fairgreen Road.

3.4.10 Bóthar Uí hEithir and R336 Prospect Hill (Route Section ‘BEPH’)

3.4.10.1 Extent of Route Sub-Section BEPH

Diagram 3.21 illustrates the extent of the Inner-City Access Route sub-section being considered where modifications are required to accommodate the delivery of the Cross-City Link.

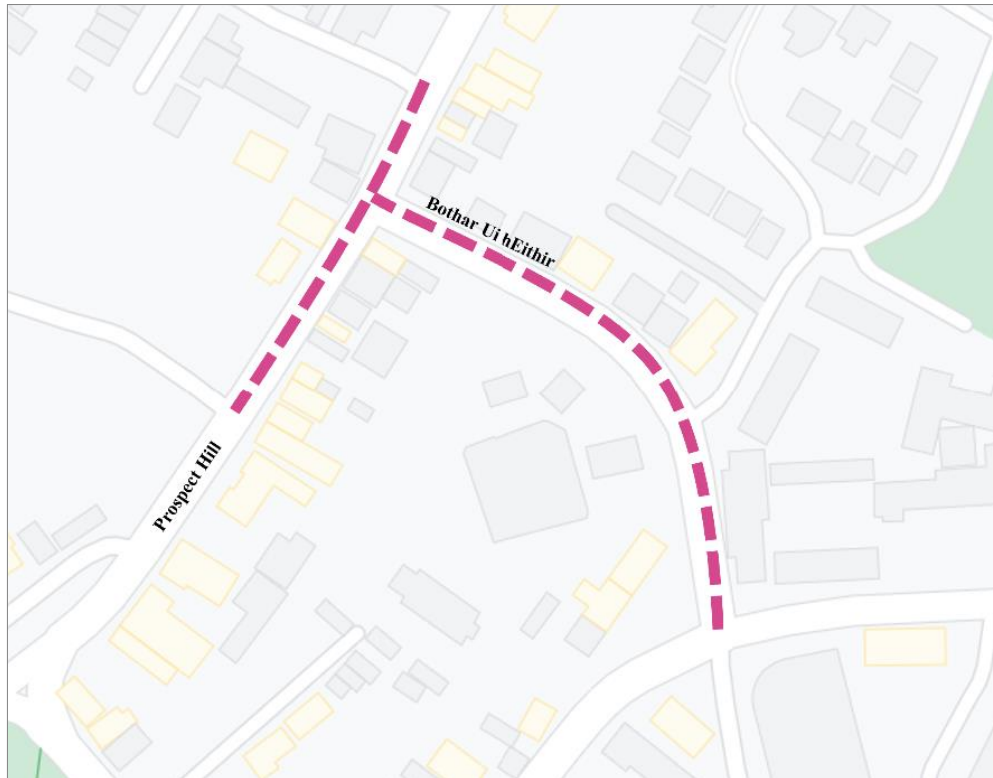


Diagram 3.21: Bóthar Uí hEithir and Prospect Hill Route Inner City Access Route Sub-section

3.4.10.2 Option BEPH1: Minor Interventions

Interventions considered under this option primarily comprise of:

- Prospect Hill being converted to a two-way street;
- Bóthar Uí hEithir being converted to a two-way street; and
- The signalisation of the junction of Prospect Hill and Bóthar Uí hEithir.

As all options assessed for the Cross-City Link require the conversion of R336 Eyre Square East and R339 Forster St to a two-way bus route, the existing one-way, clockwise circulatory of Prospect Hill, Bóthar Uí hEithir, R339 Forster Street and R336 Eyre Square East would no longer be accessible to traffic. Therefore, to facilitate movement along the Inner-City Access Route, both Prospect Hill and Bóthar Uí hEithir are required to be converted to two-way general traffic routes, connecting Fairgreen Road to Bothar na mBan. This in turn connects the Headford Road to Lough Atalia Road via the Inner-City Access Route.

Due to the constraints of building frontages at the junction of Prospect Hill and Bóthar Uí hEithir this junction must be signalised to control movements. Footpath enhancements are proposed along the length of this route.

No alternate infrastructure options have been assessed for this section.

3.4.10.3 Route Section BEPH MCA

As only one feasible option was considered as part of this options assessment, no MCA was undertaken for this sub-section of the Proposed Scheme.

It was therefore recommended that option BEPH1 becomes the preferred route option for this part of the Inner-City Access Route required to facilitate the delivery of the Cross-City Link.

3.4.11 Bóthar Na mBan / St. Brendan's Avenue / R866 Headford Road / Dyke Road (Route Section 'BA')

3.4.11.1 Extent of Route Sub-Section BA

Diagram 3.22 illustrates the extent of the Inner-City Access Route sub-section being considered where modifications are required to accommodate the delivery of the Cross-City Link.

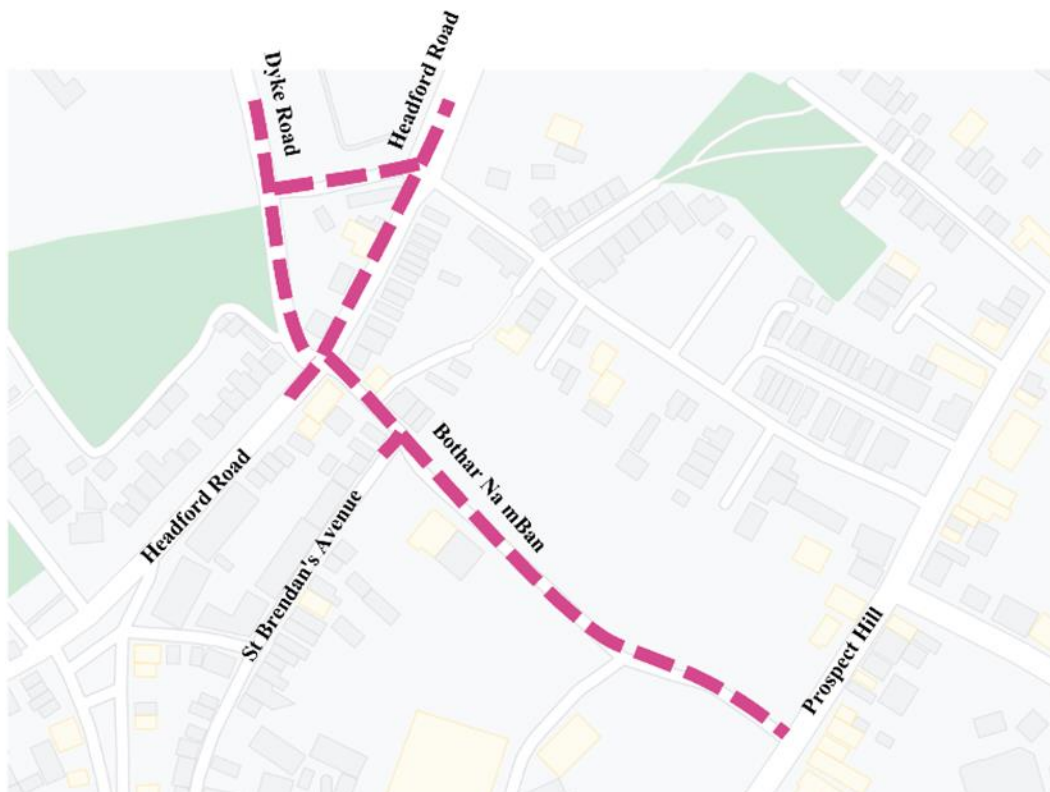


Diagram 3.22: Bóthar na mBan / St. Brendan's Avenue / Headford Road / Dyke Road Inner-City Access Route Sub-section

3.4.11.2 Option BA1: Minor Interventions

Interventions considered under this option primarily comprise of:

- The provision of a pedestrian footpath on the eastern side of St. Brendan's Avenue;

- The relocation of existing traffic signals and the STOP line further from the junction with Headford Road; and
- A reduction in available carriageway width, which would require traffic flow along a section of St. Brendan's Avenue to operate on a shuttle-type system.

This option proposes to provide an additional pedestrian footpath on the eastern side of St. Brendan's Avenue between Bóthar Na mBan and Headford Road. Currently this road corridor is only 7.3m wide and contains a single sub-standard footpath on its western side. Providing a full standard footpath on both sides of the road would require setting back the stop line for traffic on St. Brendan's Avenue back to its junction with Bóthar Na mBan, a set-back of approximately 40m. This would result in a traffic shuttle system over a distance of approximately 45m. The proposed additional footpath would create a greatly-enhanced pedestrian environment. However, the relocation of signals and the stop line would also require alterations to the control of the traffic signalling to provide sufficient inter-green time to allow cars turning left from Headford Road to pass by the traffic waiting on St. Brendan's Avenue / Bóthar Na mBan. The requirement for such a 'shuttle' situation would have a significant impact on the overall capacity of the junction. Due to the existing width, it would not be possible to provide cycle tracks along this shuttle system.

No amendments to the Headford Road or Dyke Road configurations are proposed as part of this option. The proposed city bus route that runs along Headford would not therefore receive any additional physical priority.

3.4.11.3 Option BA2: Moderate Interventions

Interventions considered under this option primarily comprise of:

- New footpath being provided on both sides of the road on St. Brendans Avenue between Bóthar Na mBan and Headford Road;
- Major changes to the Headford Road / Dyke Road junction to provide outbound bus lane contraflow on Headford Road, two lanes outbound from Bóthar Na mBan;
- The implementation of a one-way traffic circulation system clockwise around the Headford Road/Dyke Road 'triangle';
- The provision of a two-way cycle track along Dyke Road connecting the Dyke Road to The Plots and Headford Road;
- The acquisition of 2 no. residential properties; and
- The realignment of Bóthar Na mBan at its junction with Prospect Hill to prioritise movement along the Inner-City Access Road.

This option proposes to widen St. Brendan's Avenue/Bóthar Na mBan as it approaches the junction with Headford Road in order to provide footpaths on both sides and two vehicle lanes for left turn and straight ahead movements. This would require the acquisition and demolition of 2 no. residential properties along the south-western side of St. Brendan's Avenue to enable the works.

The existing width of 7.3m on St. Brendan's Avenue is insufficient to provide a standard footpath on both sides of the road and retain two-way traffic along the Inner-City Access Route.

This option would also implement a one-way traffic circulation system clockwise around the Headford Road/Dyke Road 'triangle' (and hence no right-turn from Bóthar Na mBan directly onto Headford Road). Traffic from St. Brendan's Avenue, seeking to turn right to Headford Road would route north to Dyke Road and then east to Headford Road. This would permit traffic to travel along both directions of the Inner-City Access Route simultaneously.

The resultant free space on Headford Road would allow for an outbound bus lane to be provided between the junction with St. Brendan's Avenue and the junction with St. Bridget's Place, which would ensure that outbound bus services on the Headford Road are afforded a degree of priority over general traffic from St. Brendan's Avenue/Bóthar Na mBan (which would route on the clockwise loop outlined above).

Due to the implementation of a one-way vehicle circulatory, a contra-flow cycle track connecting the Dyke Road to The Plots is proposed to maintain cyclist priority as part of this option.

In order to provide a two-way cycle track and realigned footpaths and traffic signals at Dyke Road, road widening into The Plots and the Dyke Road car park would be necessary.

At the junction of Bóthar Na mBan with Prospect Hill, realignment of Bóthar na mBan is proposed, in order to provide priority for two-way movements along the Inner City Access Route. This would require land acquisition from Galway County Council's County Hall.

As the proposal contained in Option BA2 meets the requirements of both moderate and major intervention, and provides new footpaths along St. Brendan's Avenue, contra flow bus lane along Headford Road, a contra flow cycle track at Dyke Road, while providing two-way movement along the Inner-City Access Route, no additional major intervention is considered.

3.4.11.4 Route Section BA Alternative Options Considered

Other options considered along this section of the route but not carried forward to assessment stage are outlined below:

- An option similar to BA2, however, road widening to occur on the opposite side of St. Brendan's Avenue. This option was examined and sifted out. This option would result in the acquisition of 6 no. residential properties and would further exacerbate the 'swan-neck' alignment of the road approaching the junction. Furthermore, it would create a staggered junction with Headford Road and Dyke Road rather than a crossroad junction;

- An option of making St. Brendan's Avenue between Headford Road and Bothar na mBan one-way in either direction. This option was examined and sifted out.
As this street forms part of the Inner-City Access Network, diversions (likely onto St. Bridget's Place or St. Brendan's Avenue to Woodquay) would not meet the objectives of the Inner-City Access Route and would likely result in strategic traffic movements diverting onto residential streets; and
- A Do-Nothing Option. Due to the requirement of residential property acquisition at this location for Option BA2, a do-nothing option was also examined to fully establish the need for works at this section. As the proposed Inner-City Access Route will play a key role in managing traffic movements around the city centre once traffic is displaced by the Cross-City Link, including retaining and improving access to city centre car parks, it is important that an appropriate level of service for general traffic movement is provided for. Similarly, as the GTS envisages Galway as a 'walking city' and identified the need to improve and update pedestrian networks, adequate provision for pedestrians needs to be considered as part of the implementation of the Inner-City Access Route. As the footpath on eastern side of St. Brendan's Avenue is currently only 1.2m wide, which is further restricted to an effective width of 0.6m in places, and there is a 23m section of road on the eastern side of St. Brendan's Avenue with no footpath present, a do-nothing option in this location was not considered feasible based on achieving the Proposed Scheme and GTS objectives.

3.4.11.5 Route Section BA MCA

A summary of the MCA undertaken is presented in Table 3.7.

Table 3.7: Route Section BA MCA Summary

Assessment Criteria/sub-criteria		Options	
Criterion	Assessment Sub-Criterion	BA1	BA2
Economy	1.a. Capital Cost		
	1.b. Transport Reliability and Quality (PT Journey Time)		
	1.c. Transport Reliability and Quality (Pedestrian and Cyclist Journey Quality and Time)		
	1.d. Transport Reliability and Quality (All Vehicles Journey Time)		
Safety	2.a. Pedestrian User Safety		
	2.b. Cyclist User Safety		
	2.c. Public Transport User Safety		
	2.d. Other Road User Safety		
Physical Activity	3.a. Promotion of Active Travel		
Environment	Archaeological, Architectural and Cultural Heritage		

Assessment Criteria/sub-criteria		Options	
Criterion	Assessment Sub-Criterion	BA1	BA2
	Flora & Fauna		
	Soils and Geology		
	Hydrology		
	Landscape and Visual		
	Air Quality		
	Noise & Vibration		
	Land Use Character		
Accessibility and Social Inclusion	5.a. Access to Key Trip Attractors		
	5.b. Mobility Impaired User Benefits		
Integration	6.a. Public Transport Network Integration		
	6.b. Cycle Network Integration		
	6.c. Road Network Integration		
GTS Policies	7.a. Efficient and Reliable public transport (to and through the city centre)		
	7.b. Enable Traffic to access and move around the city centre.		
	7.c. Provision of Access to existing facilities		
	7.d. Safe and efficient movement of Pedestrians and Cyclists on and crossing the routes.		
	7.e. Remove non-essential motorised traffic from core city centre		

The MCA identifies that option BA2 clearly provides higher benefits than option BA1 and better meets the objectives of the scheme. This is largely due to the significant traffic capacity reductions on the Inner-City Access Route that would be experienced in option BA1 due to the shuttle system between Bóthar na mBan and Headford Road. This shuttle system would likely result in the Inner-City Access Route failing to function as required, resulting in congestion and delay likely across the city centre, potentially impacting on the operation of the Cross-City Link. Therefore, based on the MCA results, option BA2 was identified as the preferred route option for this part of the Inner-City Access Route required to facilitate the delivery of the Cross-City Link.

3.4.12 Woodquay / Walsh's Terrace / Daly's Place / Mary Street (Route Section 'WWDM')

3.4.12.1 Extent of Route Sub-Section WWDM

Diagram 3.23 illustrates the extent of the Inner-City Access Route sub-section being considered where modifications are required to accommodate the delivery of the Cross-City Link.

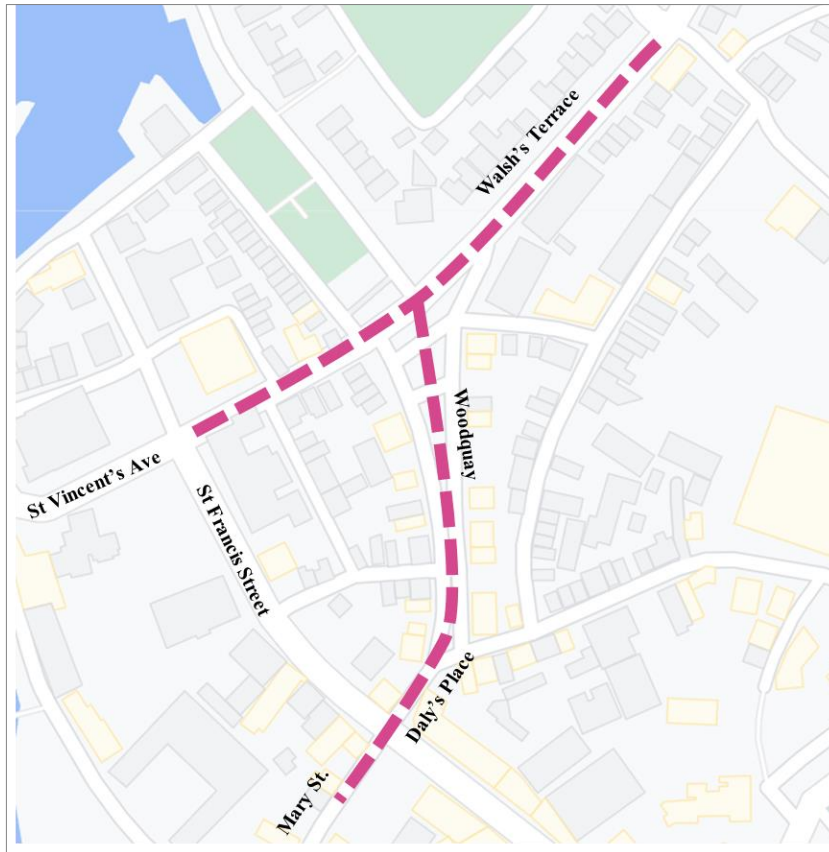


Diagram 3.23: Wood Quay / Walsh's Terrace / Daly's Place / Mary Street Inner-City Access Route Sub-section

3.4.12.2 Option WWDM1: Minor Interventions

Interventions considered under this option primarily consist of:

- Wood Quay upgraded to provide a single, southbound traffic lane to connect to Eyre Street;
- Rationalisation of on-street parking along Walsh's Terrace and Wood Quay;
- Daly's Place converted from a one-way northbound route to a one-way southbound route;
- Walsh's Terrace west of Wood Quay reconfigured to being bus lane only outbound;
- Upgrading and widening pedestrian footways and crossing points to improve pedestrian accessibility along Walsh's Terrace; and
- New public realm space to be created along Wood Quay.

This option looks at the conversion of Wood Quay to provide a single southbound traffic lane to connect to Eyre Street. West of the junction with Bóthar na mBan, along Walsh's Terrace it is proposed to rationalise on-street parking and carry out localised footpath widening. Walsh's Terrace will also have a new signalised pedestrian crossing installed to the east of Wood Quay.

The on-street parking within Wood Quay would be reduced from 66 to 22 (with some parking provided alongside the southbound traffic lane) and the remaining area to be converted to a public space. Thus, instead of continuing to the Salmon Weir Bridge, westbound traffic would be diverted south via Wood Quay. This traffic will continue south along Daly's Place (also converted from a northbound route to a southbound route) to the junction with Mary Street/Eglinton Street. This junction would be signalised, with pedestrian crossings provided on all arms. The junction to Corrib Terrace would be closed (vehicles will instead access from the Riverside junction to the east). To the east of the junction with Wood Quay, Walsh's Terrace would have on-street parking rationalised.

West of the junction with Wood Quay, on Walsh's Terrace it is proposed to designate the westbound carriageway as a time-regulated bus lane (similar to the approach to the Salmon Weir Bridge west of the junction with St. Francis Street. This would provide a mixture of virtual bus priority and full bus priority, improving bus speeds, reliability and punctuality. Bus stops along the route would be provided with shelters, where feasible.

This virtual bus priority and full bus priority along Walsh's Terrace and St. Vincent's Avenue will enable safer and more efficient cycling in the inbound and outbound travel lanes, due to traffic calming effects. A segregated cycle lane is also to be provided in the outbound direction along Woodquay.

No alternate infrastructure options have been assessed for this section.

3.4.12.3 Route Section WWDM MCA

As only one feasible option was considered as part of this options assessment, no MCA was undertaken for this route section of the Proposed Scheme.

It was therefore recommended that Option WWDM1 becomes the preferred route scheme option for this sub-section.

3.4.13 Forthill Street / R336 Merchants Road / Queen Street (Route Section 'FMQ')

3.4.13.1 Extent of Route Sub-Section FMQ

Diagram 3.24 illustrates the extent of the Inner-City Access Route sub-section being considered where modifications are required to accommodate the delivery of the Cross-City Link.

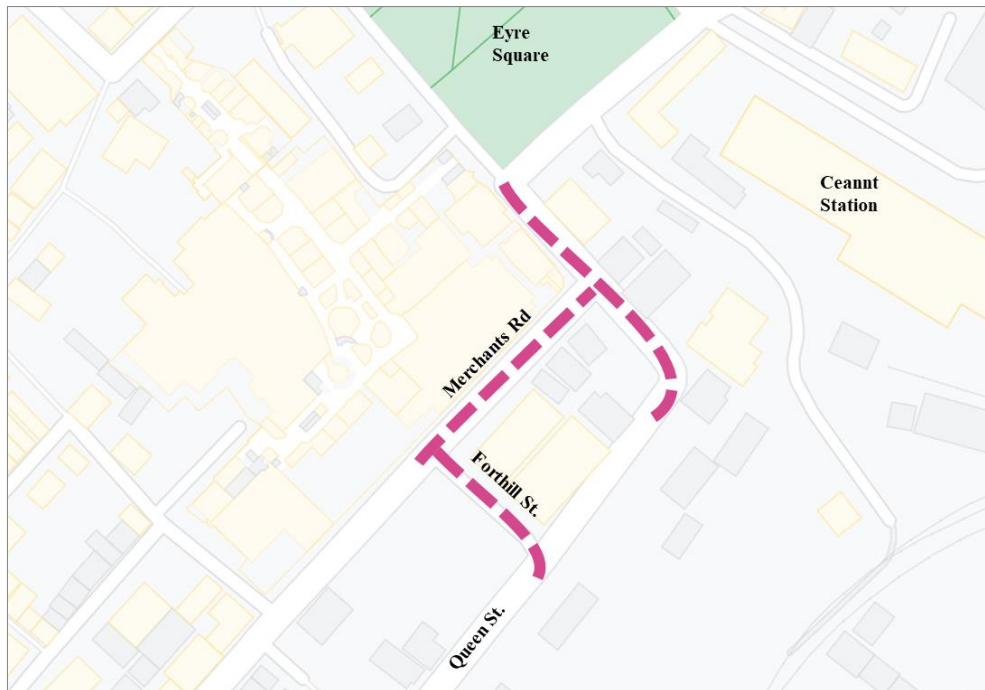


Diagram 3.24: Forthill Street / R336 Merchants Road / Queen Street Inner-City Access Route Sub-section

3.4.13.2 Option FMQ1: Minor Interventions

Interventions considered under this option primarily consist of:

- Provision of raised pedestrian crossings at both ends of Merchants Road;
- On-street parking rationalised and reduced on Forthill Road and the carriageway footprint reduced so as to provide wider footpaths;
- Provision of signalised pedestrian crossings on Merchants Road and Forthill Road.

This option involves converting the carriageway approaching from the south-west via Merchants Road, to provide two right-turning lanes onto Forthill Road (there is a single right-turning lane at present). Straight-ahead traffic would share a lane with right-turning traffic. Continuing east, raised, uncontrolled pedestrian crossings are proposed at both ends of Merchants Road (i.e. one to the east of the junction with Forthill Road and another to the west of the junction with Victoria Place).

Forthill Road would be improved, with on-street parking rationalised and reduced and the carriageway footprint reduced so as to provide wider footpaths. Signalised pedestrian crossings are proposed on Forthill Road at the junction with Merchants Road and also at the junction with Queen Street (four in total).

There is no bus priority or bus related infrastructure on this part of the scheme.

No segregated cycle lanes or cycle priority are to be provided on this part of the scheme.

3.4.13.3 Route Section FMQ Alternative Options Considered

No alternate infrastructure options have been assessed for this section.

3.4.13.4 Route Section FMQ MCA

As only one feasible option was considered as part of this options assessment, no MCA was undertaken for this route section of the Proposed Scheme.

It was therefore recommended that Option FMQ1 becomes the preferred route scheme option for this sub-section.

3.4.14 Emerging Preferred Scheme

Based on the Route Scheme Options Assessment undertaken an overall Emerging Preferred Scheme was identified.

This Emerging Preferred Scheme was then subject to a Public Consultation process prior to finalisation of the Proposed Scheme. Due to COVID-19 restrictions in place throughout 2020 and 2021, Galway City Council engaged in virtual and on-line non-statutory public consultation on the Cross-City Link project. In response to guidelines from the Irish Government and the National Public Health Emergency Team (NPHE), no information events were held in person. The first non-statutory public consultation on the Cross-City Link project commenced on October 22nd 2020, with an initial duration period of 6 weeks. Due to the relaxing of Public Health Restrictions by the Government in December 2021, and the ensuing busy period of time for the retail sector, Galway City Council extended the non-statutory public consultation on the Cross-City Link project, to allow the business community in the city to engage through January 2022.

Further detail on the Public Consultation process is presented in Section 3.5.1.

3.5 Design Alternatives

3.5.1 Consideration following Emerging Preferred Route Option Consultation

A total of 93 submissions were received as part of the Emerging Preferred Scheme Public Consultation. These submissions ranged from individual submissions by residents, commuters and local representatives, to detailed proposals from public bodies, various associations and private sector businesses.

While a variety of matters were raised in the submissions, the key issues emerging from the consultation related to the following themes:

1. Public Realm;
2. Deliveries;
3. Additional Traffic;

4. Loss of Access;
5. Cyclist Safety;
6. Pedestrian Safety;
7. Other Galway Transport Strategy Projects;
8. Loss of parking;
9. Devaluation of Property;
10. Land Acquisition;
11. Associated Bus Facilities; and
12. Noise Pollution.

Further detail on these can be found in the BusConnects Galway: Cross-City Link (University Road to Dublin Road) Public Consultation 2020-2021 Report (July 2021) available on the Galway City Council website at <https://www.galwaycity.ie/busconnects-galway-cross-city-link>.

The public consultation feedback didn't result in the need for any revisiting of alternative route options for the Proposed Scheme. The detail of the Emerging Preferred Scheme was however re-examined based on the submissions made and information received.

3.5.2 Development of the Preferred Scheme Option

Following the completion of the public consultation process in relation to the Emerging Preferred Scheme, various amendments were made to the scheme proposals to address, where practical to do so, the issues raised in submissions. Furthermore, additional design development along the proposed scheme taking into account additional information gathered. This additional design development took account of:

- New and updated topographical survey information;
- Ground investigation information;
- Landscape design amendments;
- Arboricultural design inputs;
- Further engagement with developers and owners of adjacent lands;
- Drainage design amendments;
- Ecologist inputs.

Changes to the design subsequent to those incorporated after the Public Consultation process include:

- The inclusion of additional cycle parking to encourage higher mode share for cycling, potentially reducing emissions;
- Improvements to cycle permeability to encourage higher mode share for cycling, potentially reducing emissions;

- Re-opening access to Walsh's Terrace and Corrib Terrace;
- Amendments to locations and designation of parking and loading bays;
- The provision of wider footpaths in some locations to encourage higher pedestrian usage, potentially reducing emissions and improving safety;
- Incorporation of landscaping design along R863 University Road;
- Inclusion of new drainage network along R863 University Road, petrol interceptor and outfall to Eglinton Canal to improve the quality of water discharge;
- Incorporation of landscaping design at Galway Cathedral and amendments to pedestrian crossings and plaza layout;
- Removal of outbound bus-lane on R863 Eglinton Street, to improve access to amenities including the post office;
- Relocation of pedestrian crossing and inclusion of raised table at R866 Eyre Square North to improve pedestrian connectivity between high quality public realm spaces;
- Incorporation of landscaping design at R866 Eyre Square North;
- Re-design of Prospect Hill area between Bóthar na mBan and R863/R336 Eyre Square to retain trees and improve public realm;
- Removal of Dock Road fronting Bonham Quay development from the scheme proposals to allow for integration between the two developments;
- Extension of raised table at Headford Road / Woodquay and relocation of pedestrian crossing to improve pedestrian connectivity;
- Realignment of Dyke Road at Dyke Road car-park;
- Inclusion of new drainage network along College Road including the provision of an attenuation tank, petrol interceptor and replacement outfall to Lough Atalia to improve the quality of water discharge and provide drainage control;
- Amendments to parking provision within Moneenageisha Court development;
- Widening of footpath / cycle track adjacent located between R338 Dublin Road and Lough Atalia to encourage higher pedestrian/ cyclist usage, potentially reducing emissions and improving safety.

3.6 Conclusion

The Proposed Scheme has been the subject of a systematic and comprehensive assessment of reasonable alternatives during the course of its development, informed by extensive engagement with residents, businesses, the local authority and other interested stakeholders, public representatives and the general public.

As described in this Chapter, a significant range of alternatives have been considered at three levels:

- Strategic alternatives, including mode and routes as part of the Galway Transport Strategy;
- Route Scheme alternatives; and
- Scheme Design alternatives, incorporating input from the public consultation process and detailed local level design development.

The assessment of alternatives took account of environmental impacts, alongside other relevant factors including economy, safety and accessibility, at all stages of the process.

It is considered that the examination of alternatives presented in this Chapter meets and exceeds the requirements of the EIA Directive and Section 50(2)(b)(iv) of the Roads Act (as amended), which states that an EIAR must contain ‘*a description of the reasonable alternatives studied by the road authority or the Authority, as the case may be, which are relevant to the proposed road development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed road development on the environment*’.

The Proposed Scheme is described in full in Chapter 4 (Proposed Scheme Description) of this EIAR.

3.7 References

EIA Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU

Directive 2001/42/EC — Strategic Environmental Assessment Directive (SEA)

The Roads Act 1993, as amended.

Galway City Council (2017). Galway City Development Plan (2017-2023);

Galway County Development Plan (2022-2028), including the Metropolitan Area Strategic Plan.

Draft Galway City Development Plan (2023-2029).

Galway City Council (2019) Galway Public Realm Strategy

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